

Oil production and consumption in a time of conflict - Dean Foreman of API

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SPEAKERS

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Dean Foreman: Guest

Murtha: The following Podcast is a production of Macallan Communications publishers of the Daily Energy Insider. DEI is your source for the latest on US policy and regulation news that is helping to shape an evolving energy sector. DEI offers insights on the latest developments impacting the worldwide energy industry, including investments in power plants, pipelines and renewable sources of energy. In addition, DEI tracks the influence of policymakers and regulators in our state capitals, and Washington DC DEI can be found on the web at [WWW dot daily energy insider.com](http://WWW.dailyenergyinsider.com)

Welcome to the Daily Energy Insider Podcast, I am your host, Jim Murtha.

Energy, no matter the kind, can either be your best friend or your worst enemy. In its most benign state energy can power a whole economies, create millions of jobs and underwrite the cost of entire modern civilizations. But when it turns bad energy, or the lack of it, and the cost of it, can frazzle, even the most stable of countries, it can tear apart governments and continents, it lays bare just how fragile things we take for granted can be.

Currently, we are in a time when energy is exactly a high cost for the relationship. Till now for many Americans getting a tank of gas has been an unconscious exercise. Pull up to the pump, insert your card, pump the gas and drive away. I would bet that most couldn't even remember how much that tank cost five minutes after the purchase. But no longer.

Energy prices are topping record levels. For the past year, the Biden administration has made no secret about his hostility to the oil and gas industry. The reactions on

the regulatory front and executive orders canceling energy infrastructure projects have forced up the price of gasoline to unprecedented levels. Now add in the war in Ukraine, and you have a toxic mixture of military and economic forces that are throwing the world energy market into a frenzy.

Once reliable supply lines are now fragile. And with every hiccup in the headlines, energy prices head North setting new records every time they do. It's a confusing time. And no one seems to have any sense as to where we're going, and how long it's going to take to get there. to inject some facts in the energy picture. We've invited Dr. Dean Foreman to today's podcast.

Dr. Foreman is the chief economist for the American Petroleum Institute. API is based in Washington DC and is the trade group representing most of the petroleum and gas producers, distributors, and retailers in the US and across the world.

Dr. Dean Foreman, welcome to the Daily Energy Insider Podcast.

Foreman: Hey, Jim, thanks so much for having me. It's great to be here.

Murtha: Well, we certainly have an interesting time in which to talk about energy. And in fact, it's probably more interesting than we care to care for it to be, but nevertheless, we'll, we'll plow ahead anyway. I wanted to start with some baseline numbers that will give us a framework for our discussion. So, let's start with the total amount of oil production and consumption for the entire world. How much do we produce? And how much do we consume as a planet?

Foreman: Well, the US Energy Information Administration EIA standards or their projections in the short-term energy outlook, the world this quarter is assuming are producing and consuming roughly 100 million barrels per day. Now the production has been slightly below where the consumption has been, meaning the markets been short barrels. And in the United States were over the last five or 10 years we've had an abundance of domestic production. We have shifted back to being a net importer by a fraction last year, and so far, every week this year, so it's made a difference.

Murtha: But what does the world consume in a day?

Foreman: So, EIA, their estimate right now is 100 million barrels per day, and in December, with some seasonality it was 101 million barrels per day. And importantly, with the economy growing and demand coming back, they're

projecting by the end of 2023, that the world's going to need 104 million barrels per day. So, starting in the latter half of next year, we're hitting uncharted territory, we're at record levels of demand. So economic growth, and oil and natural gas tend to go hand in hand. And as long as the economy stays on track, we're likely to need more.

Murtha: Okay, let's go let's narrow it down just to our backyard, United States. How much do we produce a day and how much do we consume?

Foreman: Okay, so the consumptions these far right, we consumed in February 21 point 6 million barrels per day. This is from by APIs, estimates from the monthly status report. They'll come out this Thursday. So, you're getting it fresh 21 point 6 million barrels per day now compared with that, our domestic crude oil production is 11 point 6 million barrels per day. So, we fully 10 million barrels per day less of domestic crude oil production relative to that consumption. We are a net importer of crude oil. And we've been traditionally a net exporter of things that we make from crude oil. So that's continued. But the degree to which these things has been has shifted as a result of the last two years with the pandemic. So, in 2020, we had been a net exporter of total petroleum, so crude and products together for the first time since 1958. I mean, this was quite a milestone all these years in the making, yeah. And the biggest difference from then till now is a drop in domestic production.

So, it's a combination of workforce supply chain, financial and policy headwinds that have contributed to this. But we're still down the better part of a million and a half barrels per day of domestic crude oil production from where we were, and roughly, that is Nexus that's the difference between having this measure of energy independence, being almost self-sufficient, in an oil sense in the aggregate, to now being dependent upon global markets and meeting to take barrels from global markets to supply the demand here at home. And as a result of that, we're more exposed to the vagaries of global geopolitics to OPEC, and it's production decisions, all the things through the value chain. So, it's just night and day in terms of the climate for energy prices and market fundamentals.

Murtha: Well, we're going to get into the complexities in a little bit. A couple of questions ahead. Let's go with this one here. The Biden Administration had been criticized for not doing enough to boost the supply of oil to help lower the price. Now, it's been rumored we don't know if this is true or not, but it's been rumored in more than one location that they are in discussions with Iran, Saudi Arabia, in

Venezuela to cajole them to raise their production. Now, is that realistic given that two of the three countries are openly hostile to US interests?

Foreman: So, let's take these things one at a time. I mean, first, the US and OPEC spare production capacity are pretty much the only places in the world, you could go and potentially get barrels of oil onto the market relatively quickly. And as opposed to working with us industry to incentivize and support domestic production. They've twice in starting in the fourth quarter, twice, two or three times gone to OPEC and been rebuffed that that's documented, that's in the news. Recently, two weekends ago, documented that they went to Venezuela, and a delegation had discussions that have literally been negotiating over things to lift sanctions on Venezuela and potentially incentivize more production, however, that production is largely owned by Russia. It's like, okay, who are you really helping?

Murtha: Whoops, we forgot to mention.

Foreman: And by the way, that the sanctions that are being put in place are intentionally designed to kind of stem anything that comes directly from Russia, but not to curb Russian contributions to global supplies, because they're so important. And they're 17% of the global liquids market. That if they did that, I mean, it would be a huge disruption to global oil supplies that would show up to be hell to pay. Yeah, so it's largely symbolic in terms of the direct flows that come in, and then the conversations with Iran and the question of what price might be extracted to again, lift the sanctions in exchange for some sort of nuclear deal where Iran is also this isn't a Russia is also imposing their own requirements there.

So, these are, these are challenging kinds of negotiations to contemplate and just get your head around. When you have a solution, demonstrably here at home, it's really easy you work with and take advantage of the endowment, tremendous amount of resources that we have across America, the potential for oil and natural gas production and self-sufficiency, it's within our grasp.

Murtha: Okay, well, let's stay with the Biden administration. Now, and this is, you know, every time Jen Psaki trots out there for her daily gaggle with the Washington press corps, she gets asked about, you know, more domestic production and she counters with the fact she says the fact that there are 9000 leases in the hands of the oil industry that they are not using to bring production online. So, the question is, is that true? And whether it's true or not Could you describe the process from owning a lease to actual production and include a timeline in that?

Foreman: So, for listeners, let's, let's explain what these things are. Because the explanation that's been given, is borderline disingenuous. You know, the fact is, they're actually, if you were technically counting it more leases not being used than what they've reported. But in the context of 100,000, or plus different leases, we're talking about a relatively small percentage. And in terms of historical comparisons, the industry is using a greater percentage of these leases, then historically they ever have. And that's thanks to the shale revolution. Now, there's no reason like, let's say, you're in Pennsylvania, and you've got a track that's, that's leased, right? If it's approved acreage, there's a pretty good chance that the exploration risk is relatively small, right? When you're talking offshore, the Gulf of Mexico is one of the lower risk deep water areas, and even then, the probability of success is only a little over half. So, if you, there's no reason to ever think that, that the amount of drilling with the amount of leases should be one to one, think of it through. If only a fraction of the potential leases gives you the ability to explore for commercial amounts of oil and gas, it takes time, over time you deploy the capital to explore it to so called risk it and understand how the geology works and how you might produce it. But over time, you might get there.

Internationally, if you're if you have an exploration success rate for a lot of those things you're talking if you get 10, or 25%. That's fantastic. So here we are. And, you know, these represent maybe a 10th of the outstanding leases that are there, again, we're utilizing a higher percentage of it. Anybody who understands the fundamentals for our industry, and I think the administration does, understands that it's not a valid comparison, right? You have to if you're using more of these than you historically have, that's a good thing. And by the way, with the change in the last administration, before the Biden restriction came in, Department of Interior was telling the industry to stack or combine an increase the volume of a lot of their requests for these drilling permits. So that one, it the process would be more efficient. And two, if there was a change of administration coming in, that a lot of these things the industry moved to basically get those permits in place before an increase what they had coming into this year. So, a lot of these things are important for understanding why there's devil in the details, you shouldn't expect them to be one on one.

And if you're saying that the industry isn't using the resources, that's just not right. I mean, we really are fundamentally increasing our investment, our drilling or production is going in the right direction. And there's no question that the profit motive to grow and invest is certainly intact. What has happened as a result of this, though, is we've had from the pandemic, workforce and supply chain issues like

many other industries that we've continued to confront. Many of the company's larger ones use euphemisms like capital discipline. And it is true that for many years, investors have been requiring of the industry that they live more within their means use their cash flow to drill and grow by reasonable profitable amounts. But for many of the companies, especially in Pennsylvania, by the way, if you look at Bloomberg tracking of the indebtedness of these companies, over half their balance sheet, many of them is debt as opposed to equity, historically, it would maybe be 1/3. And if you get to 66 0%, this almost becomes existential where no, no bank will lend to you. So, these are fundamental things where that says, I have to have the cash flow coming in before I can invest to drill. It's sort of it. It's economics 101. That way. So, the administration, on top of this, though, has had a resistance to infrastructure. It's proposed higher taxes on the industry. It's imposed a moratorium on leasing on federal lands, all new access to resources. It's proposed a Clean Energy Power Plan late last year, that would all but eliminate natural gas and US power generation. For Pennsylvania, that would be absolutely critical. So, the idea that these policy decisions don't have a chilling effect on investment, how do you invest some things that are supposed to last 20 to 30 years, if the administration is signaling that they want to completely eliminate them? So, there's there's a logical inconsistency here.

Murtha: One of the things I learned about the whole lease argument is that the lease is may or may not be used. And there's a ton of them out there, as you suggested, but a lease is not a permit. And you still need a permit to take the energy from where it's produced to where it's going to be consumed. And that's a real problem because the administration has been steadfast in its opposition to at least pipelines to get the energy to adore refinery or to the work it's consumed. Is that true as well?

Foreman: Well, that's absolutely true on the first day, literally, if you go to Excel, Jim, that's where I'm going. That's one. But the other is the Dakota Access Pipeline, which is absolutely critical lifeline for the oil production coming from the state of North Dakota. And it's still in service, but the administration has threatened that pipeline, and never before in the history of our country, have we had an in service, relatively new pipeline have its environmental permit threatened on a technicality. And there therein lies, that's the infrastructure issue. The access to resource issue is also important. And it's important for a lot of the anthems for the industry to be able to have a concentration of resources, grow its concentration within a given basins, and be able to just plan forward.

So, you're right. There is also a difference between leasing and permitting the 9000 is that figure, what that Jen Psaki had mentioned, was in reference to the so called APDS is applications for a permit to drill. And, again, we have to look in context with these are actually up in terms of the utilization compared from where they have been historically. And that's a good thing. That means we are going in the right direction.

Murtha: Okay. I want to get into, I know that you're not comfortable with pricing or predicting I'm not asking you to predict. But let me frame the question with some numbers here, the spread between a 52-week high, high and low for a barrel oil is considerable. It's about 60 bucks, the low was around 57, the high 123 give or take. Now, some suggest that if current trends continue, we could easily see \$200 or even \$300 per barrel. Is that possible? And if it does get close to those levels, won't demand drops if the prices get too high.

Foreman: So, we've got a couple of questions there. And let's take them apart. It's not it's not a personal lack of comfort. It's the API from an antitrust standpoint, it's a trade association really can be seen as collaborating on price cycles, right. So, let's talk the fundamentals. And consumers generally react to what's in their face. And when you go to the fuel pump, it may be a slight psychological response. But if you see round numbers like \$3 per gallon \$4 A gallon recently, it was \$4 a gallon back in 2008. in nominal terms, that was a trigger for a lot of changes in consumer behavior, and driving and vehicle purchases and all the rest, that today is more like \$5.25 per gallon if you were adjusting for price inflation. But nonetheless, crossing that \$4 threshold recently has caused a reaction. This is premised on where we are today, I wouldn't say that the current price that you've seen fully reflects the fact that oil prices have shot up just in the last couple of weeks, it takes time. And you don't expect them to instantly go through. Historically, things have tended to go up faster.

Murtha: So, are you saying that the number really should be higher than what it is?

Foreman: I'm saying it takes time for the market to fully digest that and whatever the next cargo is that a station needs to backfill its tanks with, if that ends up going up in price that ends up being reflected. But it does take time. And historically, if you look at the changes between crude oil and motor fuel prices, they do generally move together but the timing is not exact. And for inventory and other reasons you wouldn't expect them to be. So therein lies the issue. Is that okay? Tell me now, if the US EIA says that 56% And the latest month that they looked at for January was

of your motor or gasoline costs was directly related to crude oil. Tell me where the price of crude oil is? Well, the numbers you cited are correct. And we've had days where it's internationally shot up over \$130 a barrel. The real question is how much supply is intact? And let's acknowledge that the markets been dealing with a lot of uncertainty here because no one as they announced the sanctions remember we started this conversation saying some of these sanctions seem to be largely symbolic, right? They're meant not to take Russian banks and suppliers. Often global markets, only to curb the direct purchases of US imports of Russian product or crude oil. Well, those are minuscule.

We're talking 200,000 barrels per day of crude oil in the US. And another \$473,000 pieces mean barrels per day of refined products that are not finished products. By the way, there's no like finished gasoline or diesel fuel from Russia coming into the United States in the last year or so these have been unfinished oils and motor gasoline blending components, intermediate things, intermediate products that, frankly refiners will tell you have been purchased largely optimistically, or excuse me, it in an opportunistic sense where the product was available, and it was relatively inexpensive, but it wasn't, we're talking six and 700,000 barrels per day out of 21 point 6 million barrels per day, just a handful of a percent on a global supply demand basis, where the barrels are fungible. So, if Russia produces and doesn't send a barrel to China, that's a barrel that if China still has demand, they're going to get from the United States or somewhere else, these things just sort of move around.

It truly is fungible as a global commodity this way. If we compare back to September 2019, there was a terrorist attack in Saudi Arabia, that took 5 million barrels per day physically off of the market, okay. And prices went up immediately about \$8 a barrel. That's it. And within a short period, because we had an abundance of domestic production, those prices over a month or two came back down. And whether it was countries around the world had inventories that they could deal with this, Saudi Arabia was working to solve it. But the market saw through that, even though that was a difficult disruption, here we have with Russia no fiscal disruption, we have the fear of it. But that hasn't happened, we have the fear of collateral damage to these crude oil and refined product flows from Russia and natural gas as well as a result of collateral damage from sanctions. And then we have the third possibility is that Russia could choose to use energy as a political weapon here and profit in the process of doing so.

But the one thing is clear is that world leaders have not chosen to eliminate today, the flows of Russian oil and Russian gas, they're signaling that they'd like to get off

of it. But then from a Russian standpoint, as soon as people signaled that they want to get off of it, the Russians have to think in terms of how they, what maximizes their returns what's in their best interest. And there, that's where you start to work through these scenarios, like you were laying out of saying, well, what could happen, and I can't predict that for you. But there are scenarios around it whereby if, if we're talking disruptions of historically, 5 million barrels per day has translated into relatively small price movements. But today, with a relatively smaller change, we're seeing much larger price movements, because the market is much tighter. That's the backdrop where all this starts is that globally and, in the US, demand has been outstripping supply. In the US, our crude oil inventories are now historically low. They're the lowest for the month of February since 2015. On top of that, we mentioned that the US has now turned into an importer again. So, it when you set yourself up for that kind of dependence, instead of having the domestic production, you will ride that roller coaster, very likely. And we need to see what happens. We can't predict it, that these are uncertainties. But the best and most assured way to keep downward pressure on prices has historically been to have this abundance of domestic production. That's what we're lacking right now.

Murtha: The Russian imports you had mentioned it briefly in your reply there. If I can assess your assessment of the impact of Russian oil, the president suspended it. It's really minimal. As far as the American market is concerned, is that true?

Foreman: It should be true. It's the proverbial devil is in the details. And let me give you an example. So, you'll find some refiners that remember I mentioned are taking some of these unfinished oils and then turning them into gasoline and diesel fuel and other things here domestically. The net source if they don't have that available in a market that's relatively tight for shipping, and we're many, many marine vessels shipping these things might be rushed and flagged. It just it's like a domino effect, right? You say I can't have this one, but I've got to get the cargo or similar product from somewhere else, it's, it's possible. But anytime you put trade restrictions in place, it raises transactions costs through the system. And the question is, will that be material visible from a consumer standpoint? By far, the fundamental thing that is showing up in consumer prices right now is just the supply demand fundamentals. It's not specific to the sanctions, but the markets don't respond well to global markets don't like uncertainty, they don't like a lack of information.

And what their pricing is, is the uncertainty that you might lose a lot more production than what would really be actually clear as a result of these particular

sanctions. But directionally there's no question that transactions costs will go up for some of the refiners and transporters. And it's the analog or the reverse analog here is the lifting of US crude oil. But there was an export ban for 50 years on exporting crude oil from I remember, up until the end of 2015, right. And by our estimates, it looks like lifting that has produced lower refinery costs and enabled a better matching of refinery, the facilities people have with the crude oil grades that are available. And that's produced savings of over \$50 billion just for the refiners themselves. So, per year, 50 billion a year. So, the idea that with these sanctions, that we aren't raising costs in a way that could ultimately amount to something we never say never there. We hope that symbolic, but we need to see how global markets respond to this. And again, whether the overall supply demand balance remains intact.

Murtha: It wasn't too long ago that we were considered, we considered ourselves being energy independent. I guess it's a couple of three years ago. Was that really true? And if so, what would it take for us to get back there?

Foreman: It was absolutely true. We, again, 1958. Last time, we had been an exporter all the way to year 2020. And it was just a tectonic increase in the amount of domestic production on the heels of the shale revolution for both oil and natural gas, by the way, we're talking oil or petroleum of crude oil and liquid products. But for Pennsylvania, in particular, the transition in the amount of natural gas resources in production has been phenomenal. And none of this happens within infrastructure. By the way, if you don't have pipeline infrastructure to make it go, it doesn't work. So, all of that the enabling of the trade, the more efficient functioning of a market fundamentally did produce a positive story there. What do we need back? We need to incentivize domestic production both on the oil and the gas side. And in lieu of what's happening geopolitically right now, that's a function of government.

Murtha: The incentives are coming from government then are they not?

That's a big part of it. Yeah. I mean, yeah, it starts it starts with permitting there on the gas side. And this is critical. So, you're sitting in Pennsylvania, right, and you're producing natural gas, whether the US EIA, or we can look at certain consultant sources, most of those sources are showing that Pennsylvania and Appalachian natural gas production could decline this year, despite these high prices, and the fact that there's a need, right. But what's happening is that AI would project that out. Gas having basically doubled from \$2.50 per million BTU's a year ago, to \$4.50 to five recently and as high as six is that just economically, you put

less natural gas into power generation vis-a-vis, coal, renewables and other sources at those relative prices. So that's those are the economics of power generation. The big growth area for natural gas has been the exports, both pipelines going south to Mexico that have expanded, as well as liquefied natural gas which Europe is in desperate need of right now. Asia is in desperate need of right now, and in fact, has never paid more. So, we're concerned when we see prices shoot up to four to \$4 and \$5 per million BTU from a consumption standpoint in the US, when in the fourth quarter Europe paid over \$30 per million BTU's you unprecedented, never higher.

With this Russian-Ukraine crisis. We've seen prices shoot in Asia to over \$40 per million per BTU and over \$60 per BTU and Europe. So, they it's an energy crisis truly for Europe right now and US LNG if Pennsylvania's gas producers could have better access to LNG exports. tremendous help for the economy domestically, internationally and our allies countering Russian and Chinese presence here that this is a tremendous opportunity as far as where it can go. But it starts with incentivizing the production but that doesn't help unless you have the permitting.

The ability to build and operate pipelines and export infrastructure to go with it.

Murtha: And that leads me to my next question. Russia has proven it will use energy as a weapon as a Europe, European countries, kind of being held hostage to the threat of gas being cut off by the Kremlin, if they haven't done so already. As you had mentioned previously, the US has abundant natural gas reserves in the Marcellus Shale and shale deposits all over the country. Can we just boost production here to help them out and ship it over there? Is it that simple? Or is it much more complex than I think?

Foreman: Well, it pretty much is that simple. I mean, again, devils in the details, right? So, we've talked about workforce and supply chain and financial issues, and the policy headwinds that have compounded that policy has the ability and if you think about the things that governments good at fixing, right, permitting should be the most basic thing that they can help with the financing it is deferring capital expenses. In some cases, when they want something, they find a way to incentivize the technology today. So, depending upon what the wherewithal is, and whether they see the ability to move these things forward, government can clear many of the roadblocks that have deterred production investment, and all the rest, including market access and helping allies along the way. So philosophically, it's simple. There are, again, the devil in the details. But it's entirely possible to incentivize that production. As opposed to for natural gas, for example, another approach the

administration has done is to go to the country of Qatar, and ask them to produce more, and again, have been rebuffed. Right. So, it's we have a Secretary of Energy that up until late last year, literally would not utter the word natural gas, wouldn't say the term natural gas, right. And that that's a problem. I mean, you can't, through a crisis and energy crisis right now talk about wanting to help consumers at the pump, to have lower prices across the board, to do everything they can say that, but then not work with the industry, not incentivized to domestic production to put up roadblocks in terms of access to resources, access to building and operating infrastructure, proposing higher taxes, proposing to eliminate the product over time, you know, where Europe is, as a result of this energy crisis, they have now proposed and approved counting natural gas along with nuclear as clean forms of energy in their advanced power plants. So that's more progressive than where our administration is wanting to eliminate natural gas over time and power, that thinking fundamentally needs to change, right? That that has to change, or you can't incentivize long term investments in the industry.

Murtha: Well, speaking of renewables, renewable sources of energy are the holy grail the Biden administration, and according to some the foundation of their hostility towards fossil fuels, now desire aside, how much of our economy can run on renewables, in your estimation.

Foreman: So two things here, one is at what costs right so if you want in your power generation next 20, or 30%, renewables, no harm, no foul, you get up to half, you've got your different cost levels, how you interconnect grids, whether you have any storage, utility scale storage for, for power to backup, and natural gas has played an important role in backing up and enabling higher percentages of renewables. But if you want to get to 80, and 100%, renewables, and you don't have cost effective storage on utility scale, and by the way, it's the same sort of like exponential cost curve going up where if you want battery storage for a few seconds or minutes, it's one cost level. But if you need it to last days or weeks during a weather crisis, it's a completely different level of reliability and cost at that point. So technically, you might could get there, but the cost effectiveness of getting there is very much a question.

And then when we talk about renewables, we think about wind and solar in particular as being local sources, because wherever you are, that the wind blows is sunshine, that's a local source of energy. But again, you have to incentivize the production of the solar panels and wind turbines through the value chain in the United States. Otherwise, if it's just an imported Chinese panel, when, after 15 years, let's say that that penalty is to be replaced. You get one price buying it from

China today, but if the US dollar depreciates or China raises the prices in the future, it's you've really leased the energy even though it's local energy as opposed to buying it so that that's we need from us national security and economic security standpoint to think about those kinds of buy versus lease decisions and having that controllable destinate within our own grass, knowing that we've got these resources here at home. So, we all agree that there is an energy transition, renewables have become more cost effective. They do compete and play an important role in the power mix. But we do need this above all the above kind of energy structuring strategy, including natural gas, including this player to be able to have this competition where the market incentive sort that out. And we're, we're API advocates is that we have market incentives that solve these problems, because ultimately, historically, that's been the most efficient way of getting good outcomes.

Murtha: Okay, I'm going to get you out here on this one here. Let's take into account all the factors that influence oil producers. And knowing that the administration is highly unlikely to change its posture relative to fossil fuels. Is it possible for the industry to pump enough oil to cover our domestic demand?

(Pause)

I think I asked a difficult question!

Foreman: Well, I want to contemplate it. Because, you know, physically, technically, of course, it's possible, right? The resources are there. And free, we're always going to be because we have coastal areas that are not pipeline connected to the midcontinent production and refining to the same degree. That would be it's just not economically feasible, right. There's a reason that the east and the west coast, the United States continue to import and export crude oil. And it's going to be economic for them to continue to do that on the margin in the future. But in the aggregate as a country, the idea that we can be relatively self-sufficient and be a petroleum net exporter, or at least balanced is certainly within our grasp, and getting back the production that we've lost since the peak levels, the domestic both crude oil and natural gas liquids relative to late 2019 and early 2020. That's certainly feasible.

So, look with the right policies in place, there's no question the industry both has an incentive and ability to return to this, this high wide watermarks by EIS projections, they would have the US adding the better part of the million and a half barrels per day of crude oil production this year. Now, that could be that could turn

out to be optimistic given the pace at which drilling has been increasing. And what we saw coming into this year was that we had crude oil production in December of 11 point 7 million barrels per day dropped in January to 11.6. In this report that AEI will issue tomorrow, it's also an 11.6 through February.

So, if you want to add one and a half million barrels per day of production in the United States, you've got to start seeing that actually increase if and given the year has not started out front loaded, that would mean quite a trajectory going forward. It's possible, but again, with some policy support, with a concerted effort. And all the incentives are in place in terms of every oil and gas base in the United States on average, and there's always a distribution, but on average, should be able to make money at recent prices for oil and for natural gas for dedicated dry gas drilling to oil drilling and associated gas in the Permian Basin and other places. It's within our grasp. It's just a question of getting all the things lined up and being compatible with energy policies so that we have a cogent approach through the value chain to making sure that we achieve these goals.

Murtha: Okay. Well, that's all the time we have for today's podcast, Dr. Dean Foreman from API. Thank you so much for your time, and your expertise.

Foreman: Thanks so much, Jim. It's been great to speaking with you. Thanks.

Murtha: The preceding podcast was a production of Macallan Communications publishers of the Daily Energy Insider. To submit your ideas for a future podcast, just go to www.dailyenergyinsider.com and look for the podcast section on the front page. Until next time, I'm your host Jim Murtha. Be well be safe and be prosperous.

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