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Nan Li:

Good afternoon, everyone. I'm Nan Li, the US chemicals analyst at Bernstein. Thank you so much for being here today. We are thrilled to have Jim Fitterling, chairman and CEO of Dow with us for today. And in the audience today, we also have Pankaj Gupta, the head of IR from Dow. Jim was named CEO of Dow in 2018. Before that, Jim served as the president and chief operating officer. During his 39 years at Dow, Jim has held leadership positions in many of the company's businesses and also in corporate development and business operations. Jim has played a key role in transforming Dow from a lower margin commodity business into one that is more focused on higher growth consumer demand driven markets that also value innovation. In addition, he has also served as a business lead in launching Dow's next generation sustainability goals. So before we invite Jim to the stage, I'd like to cover a very quick housekeeping item. Throughout the fireside chat, feel free to submit your questions in the Pigeonhole app, and also you can vote up questions over there as well. So with that, please join me in welcoming Jim to the stage. Jim will have some opening remarks and after that we'll sit down for the conversation. Thank you.

Jim Fitterling:

Thank you and good afternoon everyone. Beginning here on slide two, since we spun out from DowDuPont in 2019, we've created a more streamlined portfolio that serves some attractive market verticals growing faster than GDP. Our competitive advantages feature global scale, best in class feedstock and derivative flexibility, and a strategically located footprint to supply demand in all major geographic areas. We have consistently operated the business with the best owner mindset as well as a discipline and balanced approach to capital allocation. As a result of these actions, at the end of 2022, we raised our underlying earnings above pre-pandemic levels, nearly tripled our three-year cumulative free cash flow, and have grown cash flow from operations every year since Spin. We reduced our net debt and pension liabilities by more than 10 billion dollars, and have delivered around 80% of net income back to our shareholders since Spin, well above our target of 65% across the economic cycle.

Altogether, our actions have reduced our cash commitments by approximately $1 billion, driven by significantly lower debt and pension liabilities, no joint venture cash contributions and reduced share count. As a result, we've improved the company's ability to execute on our financial and capital allocation priorities versus prior cycles and across a variety of macroeconomic environments. In addition, we remain committed to our disciplined and balanced approach to capital allocation across the economic cycle. This includes keeping average CapEx within D&A and targeting greater than 13% return on invested capital. We will return 65% of net income to shareholders with our attractive dividend and share buybacks. All this we have executed while maintaining our ratings agency adjusted debt to EBITDA of two to two and a half times.

Our strong performance relative to peers is clear in our most recent annual benchmarking on slide three. A few key highlights, three year average EBITDA margins and return on invested capital above the peer median, best in class free cash flow yield on a three-year average, which is nearly two times the

peer average and three times the sector and market averages, best in class net debt reduction resulting in improved credit ratings and lower interest costs, and above pure median shareholder remuneration with a dividend yield above the peer, sector and market averages. Consistent, disciplined and balanced capital allocation coupled with execution of our long-term strategy to Decarbonize and Grow the business continue to make Dow a compelling investment opportunity.

Turning to slide four, we continue to see positive underlying demand trends and above GDP growth across our attractive market verticals of packaging, infrastructure, consumer and mobility. Our diverse global portfolio is well positioned to capture this demand and we are executing our targeted suite of higher return, lower risk investments to deliver approximately 2 billion in underlying earnings by mid-decade. These include incremental investments in functional polymers in the P&SP segment as well as targeted high value investments in alkoxylates, downstream silicones, polyurethane systems, and coatings. And I'm pleased to report that our FCDH unit in Plaquemine, Louisiana has started up and is now operational. The unit is feeding full capacity to the LA3 separation system and it's ramping up rates now and the team is working hard to learn as much as they can about yields and improve efficiency.

Efforts like these will continue to provide cashflow generation, building on our track record of cashflow growth every year since Spin. In addition to operating earnings, we have up to a billion dollars of unique to Dow cash levers. These include resolution of our current NOVA litigation, structural working capital improvements, and additional best owner infrastructure related actions. Advancing these near-term growth investments positions Dow well to capture demand and raise our underlying earnings profile as market conditions begin to improve.

On slide five, consumer and brand owner demand for more sustainable and circular solutions also continue to grow. It represents a significant opportunity for Dow as we plan to lead the transition to a more sustainable future. Our decarbonize and growth strategy positions us to drive long-term shareholder value creation. This includes phased-in investments to decarbonize our asset footprint and enhance our earnings profile as well as efforts to enable a more circular economy. For example, our Alberta Path to Zero project will be the world's first net-zero CO2 emissions, ethylene and derivatives complex. We recently announced Fluor as our partner for front-end engineering and design services, and Linde as our industrial gas partner to supply nitrogen and clean hydrogen for the site. The project remains on track to reach final investment decision this year and will deliver another billion dollars in underlying earnings growth by 2030. We recently announced our Seadrift, Texas manufacturing site was selected for our advanced nuclear project with X-energy. This will be the first grid-scale advanced nuclear energy facility for an industrial site in North America. It represents an important step towards sustainable, reliable, and affordable clean energy in the United States. Additionally, we're taking a capital efficient approach to scale and commercialized production for both advanced and mechanical recycling for plastics as well as for polyurethanes. This includes strategic partnerships with Mura Technology and Valoregen, among others. These actions will enable us to deliver our 2030 Transform the Waste target to commercialize three million metric tons per year of circular and renewable solutions.

Taking a closer look at the near-term dynamics on slide six, while we see pockets of strength, we expect macro conditions to remain challenging in the near term. For example, European PMI contracted for the 10th consecutive month in April to 45.8, the lowest level in almost three years. However in the US, PMI has remained relatively resilient and returned to expansionary levels in April. That said, US consumer sentiment declined 7% month over month in May amid some renewed concerns about economic trajectory. In addition, retail sales growth remains tepid, increasing by only 0.4% month over month in April, with furniture and electronic sales both declining. In China, the economic recovery continues, but it's very uneven. Month over month, retail sales grew for the fourth straight month in April, reflecting significant increases in clothing, cosmetics, automotive, and furniture end markets. However, there was

a lower than expected demand for home appliances and building materials. In addition, industrial production continued to rise in April, however, at levels well below expectations, and imports also decreased by almost 8% year over year.

Our earnings outlook remains in line with the modeling inputs that we shared on our first quarter earnings call, primarily due to lower feedstock costs and the impact of our in-flight cost savings actions. Due to the slower macroeconomic activity and lower pricing levels, we now expect the second quarter revenue will be in the range of $11.0 to 11.5 billion dollars. Our diverse portfolio enables us to capture volume in sectors where demand is more resilient, including energy, agriculture, personal care, and household applications. We're also prioritizing resources [*corrected by the company*] toward high value products including functional polymers, performance silicones, and specialty solvents where demand remains more resilient. Our advantaged cost position and industry leading feedstock flexibility enable us to benefit from lower feedstock costs and healthy oil to gas spreads. And we're making progress on our previously announced actions to deliver one billion cost savings in 2023, where we expect to achieve 35% of that savings in the first half of the year and the remaining 65% in the second half of this year.

Closing on slide seven, in the near term, Dow will continue to respond quickly as macro conditions change. We expect the benefit of our operational and cost savings actions to build over the course of the year. Our disciplined and balanced approach to capital allocation since Spin allows us to fully execute on our financial priorities versus prior cycles, and we will maintain this disciplined and balanced approach as we advance our long-term decarbonizing growth strategy. Our growth investments are on track to raise our underlying earnings by an additional three billion dollars by 2030. At the same time, we will reduce scope one and two CO2 emissions by 30% compared to our 2005 levels, and will further advance us towards achieving our net-zero CO2 emissions target by 2050. With that, thank you Nan, and I'll turn it over to you for some Q& A.

Nan Li:

Thank you, Jim. Just I as a reminder to the audience, at any given time, please feel free to submit your questions in the Pigeonhole app. And Jim, maybe we'll just continue the topic on the macro part and cycle, I think that's something that is in people's mind right now. When it comes to the chemicals, it's impacted by a lot of different cycles . I think the macro economy impacts the volume, the demand side, and also we have the capacity expansion cycle that impacts the supply side, and we also have the oil and gas price that impacts the margin. So where do you think we are right now in a cycle?

Jim Fitterling:

Yeah, so we're in kind of in an unusual spot. I would say, when you think about the demand for durable goods, things are obviously in a down cycle right now, coming off of a very strong peak during post pandemic or middle of the pandemic, people at home spending a lot of money on their homes, buying a lot of consumer electronics, appliances. And we all remember the shortages and how hard it was to get things at that time. Now we've shifted to more of a services economy and what I would say is a fast moving consumer goods kind of daily essentials economy. And what that has done is taken the steam out of the housing sector. And also, inflation has put a lot of pressure on households for high ticket item purchases. And so we see that in automotive. Mobility obviously is holding up well in electric vehicles where there's incentives to make that move towards the new technology. But internal combustion engine vehicles is still a little bit slow compared to what we would normally see. I'd say on oil and gas, oil to gas spreads, as I mentioned, are relatively positive for us and today they're in the neighborhood of about $66 a barrel equivalent, mainly because oil remains high, even in light of what I just talked about. There's not a lot of new supply coming into the oil markets. I would say, personally, I think the fact that

we're still in the spring, we're not into the heavy travel season yet, that usually tightens up oil price a little bit, and Russian oil, even though there are sanctions out there, Russian oil is still getting to the market. It's still getting to other countries, being refined, and making its way back to Europe. So Russian oil hasn't really left the market. But when you think about the next increment of supply, there's not much there. There hasn't been much investment going into oil. And so I think that's why you see the market believing that oil is posed to move up from here because it won't take much demand increase, demand signal to tighten up that remaining capacity. When you think about the markets and the way they work, if you're thinking about economic weakness, the first thing that comes out of the oil market is the short interest money. If they think things are, potentially demand is going to be slow and things are moving down, it comes out first, and then we see where the market ends up balancing. Natural gas, on the other hand, production has been relatively strong. And so you see that here in the U.S. with natural gas prices down. You see the availability of LNG around the world. Europe's costs on LNG have come down dramatically. They're probably instantaneously around $13 a million BTU.

I think they'll probably range, if I look at electricity costs, electricity costs of 25 to 40 euros a megawatt hour gives you gas costs at somewhere between 8 to $10 million BTU. So I think the near-term view on Europe energy costs is they've come down quite a bit from where they were in first quarter of 2022. Having said that, I think the big concern on demand is housing market. If you're looking at the housing market in China or the U.S., year-over-year comps are down considerably.

We know construction in China has been off as much as 40 percent. We've seen similar data here in single family homes. I'd say multi-unit residential has been a little bit more resilient. And there's the concerns now about commercial property overhanging the market. What that means for housing is that the inventories are low of available homes, so the prices are high. And it doesn't seem .... I mean, it does seem that the cost to buy a house or have a mortgage would've gone up, but I think that the spread between home owning and rents is a lot higher than people think. Right?

Rents are extremely high, yet the cost of owning is much, much higher than rents today. And both of those numbers have a big impact on the homeowners. So if you've got a mortgage that's going up because of interest rates, or if you're renting and you've got to pay those higher rents, you have less disposable income available. And today it seems to be going towards day-to-day essentials and travel, if you think about where people are spending. We know electronics, like PC sales, are off 40 percent. You would probably argue that people bought a lot of that during the pandemic. Televisions are off. Anything that has memory device chips in it is off quite a bit. And most of the chip activity is in these more elaborate platform chips or things related to the AI sector today. And we see that in the demand for the goods that go into those equivalent. Meanwhile, EVs are up in almost every geography. Battery production to support that is up. Lots of new technology to go in there. And within our business packaging and specialty plastics is, as it usually does through a cycle, is holding up relatively well on volume and has really good cost positions. And it's the more durable goods part of the sector, like in polyurethanes, that is feeling more pressure. In II&I, Industrial Solutions is doing well, a lot of fast moving consumer goods products, energy, pharma, agricultural segments that they support. In Consumer Solutions, obviously high-end businesses like cosmetics, household items, everyday household items are good. We'll see a little pressure on volume and silicones for what I would call big urban high-rise projects where we sell a lot of the glass glazing that goes into those structures. Still good for this year, but as you look at the pipeline, the pipeline going forward may slow down a bit. And then when you get into architectural coatings, we sell into both do-it-yourself and the contractor business. I would say the contractor business is holding up a little bit better on maybe off single digits year over year or do-it-yourself is off maybe low double digits, around 10 percent year over year. So long answer, but try to cover the whole range.

It feels like we've seen the bottom on ethylene margins, and we know where the cost positions are and where the high-cost and low-cost production is, and it feels like we've seen that, and we're starting to turn and see a little bit of margin improvements. I think we're at the bottom in polyurethanes, but we haven't seen the turn yet. And that turn will come when we start to see housing and durable goods take off.

Nan Li:

Mm-hmm. Looks like you're more positive on the outlook from the macro part.

Jim Fitterling:

It's heavy lifting, I would say. I mean, the reason we announced a billion dollars in structural cost reduction is we looked at the year, and it was a year where if we wanted to deliver, we were going to have to have some additional help. We couldn't just count on tailwinds from the market. We had too many segments that had headwinds in front of them, and we have tough year-over-year comps, especially the first half of the year, which was peak territory last year. And so we said we've got to have some additional help as the year builds, and that's why we announced the billion dollars.

But the teams are working hard. It does ... In packaging and specialty plastics, they're working on mix, and they're working on running the lowest-cost assets as hard as they can and balancing the rest of the fleet. And then in Polyurethanes business, they're working hard on understanding operating rates and how they can manage in a lower-demand environment and making the good decisions, I think, to make the right trade-offs.

Nan Li:

So with all the headwinds that you mentioned from the macroeconomic side, so just kind of playing the devil's advocate a little bit. So what if the economy will go south from here? So basically, what if we really go into even worse recession? So what will that do to Dow's earnings? And also out of all the business, I think you touched on that a little bit. So which businesses are more resilient to down to the downturn and also more or less cyclical?

Jim Fitterling:

Sure. Well, the more resilient businesses have always been Packaging, especially plastics, and the Consumer Solutions business. I would add ... Within II&I, I would add industrial solutions to that compared to polyurethanes. Volume-wise, appliances, automotive, housing, all hit polyurethanes pretty hard. So as things slow down there, it's a little bit harder for them to rebound. I think if you think about it from a recessionary standpoint, I mean, I could make the argument we've been in this business for 125 years, and when you look through the cycles, typically our industry leads into a recession. And if you look at where the market started to turn down last year, it was last July onward, almost a steady monthly decay in the demand that got us into the first half of this year. And that was what was behind the decision to take action.

And then our industry typically leads out of the cycle as well. So when demand comes back and inventories are low in the chain, there's a strong pull on that demand, and we feel it right away. It feels like we've gone through the downside, and we've stabilized on volumes. And now the question is, when will we start to see the signal improve and see the pull happen? Inflation is the wild card. Obviously wage inflation is there and I think is baked in as everybody expected it would be. But I think the other thing that people have to factor in is there's going to be a shakeout of some sort that happens. One of the reasons we focused hard on our balance sheet during the pandemic is we wanted to come out of the

pandemic with the strongest balance sheet in the sector. And I think we did that. As I mentioned, we reduced our cash cost needs by a billion dollars.

We really got our net debt to ... We ratcheted down our net debt to EBITDA targets to that two to two-and-a-half range. So that gives us good stability. We moved our long-term debt maturity profile out till beyond 2027, so we have nothing really due until then. And our costs, our borrowing is really bond denominated, fixed costs that are out there, and it was all done at below 5 percent rates. Really, our average is, blended average is just a little bit above 4 percent. So we're in very, very good financial shape. We continue to focus hard on cash flow and make sure that we're in a good spot there. That's what keeps the dividend safe and the dividend protected through this. And we'll continue to work on every lever to make sure that we keep that strength that we worked so hard to get and are ready for the turn up in the economy, which will come, I'm sure.

Nan Li:

Glad to hear that. And also for the turn up from the economy, especially on the more durable side, consumer durables and also auto and housing. So you've been with Dow for almost four decades, and during your experience, when those things happen, do you see a pent-up demand over there? So that means there's no demand that got lost. So all of this demand will come back later stronger, or sometimes the demand actually got lost during the recession?

Jim Fitterling:

You will. I mean, things have to happen. Think about housing for a minute. Interest rates have gone up, and we still don't have a hundred percent certainty that interest rates have reached their peak and are going to flatten out. So I think in order for people to want to step back into the housing market, whether you want to take the risk of building something speculative or whether you want to take the chance that you're going to go back into the market and buy, one of the first things you're going to look for is have rates reach their peak and flattened, and maybe there's an improvement on the other side. So we haven't seen that yet. So it's a little bit early to tell. Urbanization has kept the move on projects in big construction, what I would call mixed use construction, where you're working on both business as well as residential units.

That business has been relatively good, but there's an overhang in office space in the big cities, and I think, for that reason, you don't see much happening in commercial there. And of course, in this kind of environment, the lending tightens up right away. Those that have access to money don't need it, and those that want it don't have access to it. So we're kind of managing through that. So I think we got to see some stability on those rates first, and then we'll see if things can start to build from there.

Nan Li:

Okay. And how about from the consumer durable and also the auto side?

Jim Fitterling:

Well, I think the restocking is out on consumer durables and autos. We see that sign, the inventories through the chain are manageable. I would say there might be some sectors that have a little bit more finished goods, but I don't see it in ... Chemical sector has been pretty well managed. I'd say two levels downstream have been pretty good. So I feel like whenever we see the demand pull, we're going to see a step up right away. And I would say China and the U.S. markets are both looking kind of similar right now. I'd say the U.S. may be holding up a little bit better from an industrial standpoint, but both consumer markets are looking pretty resilient.

Nan Li:

Perfect. And also just kind of from a supply side. And can you also comment a little bit from a capacity expansion cycles along some of the bigger value chains that Dow participates in, kind of where in the cycle?

Jim Fitterling:

Yeah. Most of the new capacity for last decade in our industry has come on in China. And so we always watch China carefully to see what the timing is for new investments. If you look at polyurethanes, if you looked at siloxanes, which are the upstream monomers to make the silicones products, there's been big investments in both of those in China. So PO capacity – propylene oxide capacity – siloxanes capacity has come on. But the market in siloxanes and silicones will pick that up and eat that up. And I would say on plastics the same, there's been new capacity come on. We've seen some here in North America and we have some more that comes on this year. But the growth in packaging plastics has been so strong that it doesn't take long to eat that up. So a couple world scale crackers and derivative capacity along with that can be eaten up within a year pretty easily. When we look at the five-year outlook, China, US capacity, the rest of the world, things are pretty balanced. You can get some anomalies from quarter to quarter and year to year, but things are pretty balanced right now.

Nan Li:

And also I know that Dow has a pretty balanced sales when it comes to the contribution from different regions. And also maybe a follow-up question with China, so with what's happening in China for the past several years, with all the economy slowing down, rising labor costs and also the geopolitical tension and also the more dynamic US-China relationship. So with all of this happening, but China still accounts for about a third to half of the chemical demand, depending on which value chain you're looking at. So with all of this happening at the same time, and does Dow have a new China strategy? How do you see this coming?

Jim Fitterling:

Our strategy has been pretty consistent. We've looked at having a footprint in China for the Chinese market for a long time, really since the mid-nineties when China opened up. China never had the cost position at the time to be the low cost export market That position was owned by the United States, Canada, Middle East. We had some position in Argentina. So where you had low cost natural gas, those were advantaged locations. So China for China was always a strategy and what you saw was a buildup of capacity, but still China being a net importer of chemicals. And that's still the case today. And in some specialized technologies like our functional polymers, which is about 25% of packaging and specialty plastics, that part of the market is still served by imports from outside. When it gets to basic commodity needs, China has the capability to do more of that domestically. So that's taken pressure off the rest of the world.

So we're not looking obviously to make propylene oxide on the US Gulf coast and export it around the world. In fact, we'll probably reduce our footprint for a product like that on the Gulf Coast and balance it more on North American demand. It's very similar to Europe. Europe has not been a major exporting geography for more than a decade. It's really been focused on Europe for the European market and with these cost positions and energy, that's the way we're looking at it as well, is continuing to tighten that footprint and look at serving the European market. And what policy decisions does Europe make going forward about energy that determine how much industrial capacity will be there because they've got a

Middle East on their door and they've also got China as well looking at them to see if they can take over some of that import position.

But we remain focused on China for China, growing with our customers there. We continue to do application development in China with them. We're obviously concerned about tensions that are out there. We'd like to see better dialogue between the countries, try to work out some of the differences. But I think we're balanced in our approach and I think we've got a good long-term view.

Nan Li:

Understand. And also kind of a segue into Europe. So you mentioned Europe has become one of the highest cost regions around the world. I think during some of the earnings calls, you guys also mentioned that you have a plan on Europe. So can you maybe provide an update to us on where we are with regards to European plan?

Jim Fitterling:

Yeah, we've looked hard at our European assets. I would say all of our cracker and plastics derivatives there are profitable and cash positive. So we haven't made any decisions to take anything out there. Because we've got a good feedstock cost position, we've looked at the derivatives more. And we've got a slate of closures that we'll announce through the year. More than half of them have been announced. And so we've got about the same number more to come. And that's part of that 2000 headcount restructuring and also the charge that we took in the first quarter to take those assets down. And we were looking at how challenged were they on a cost position? Did we think they could ever get to a position where they would be able to operate profitably? And when we went through a pretty rigorous analysis of that and decided that now was the right time to make the move.

So I still feel good about our cost position on crackers. We're watching energy costs in Germany pretty closely, I would say the area that's most exposed. And we're still trying to work through with the government where energy costs and policies are going to land. Some pressure's been taken off obviously because of what's going in the energy market, but we also know that those things could change going into winter or another escalation of activities in Russia, Ukraine, we have to be eyes wide open about that and be prepared to make another move if that is necessitated.

Nan Li:

So basically right now it is still a self-sustaining region, which still generates a lot of cash and then we treat it as kind of a standalone region and then we wait and see how the energy market or some of the policies will change.

Jim Fitterling:

Right. We want to make sure we can still service the domestic market. We want to keep an eye toward demand. I think the real next question is, what's going to happen to demand? What kind of pressure is going to be on the industrial economy? How much of the industrial economy that we do business with will stay in Europe? How much might move? How will that affect what we need to do? But from an energy cost position and a monomer cost position, we're in a good shape on our cost positions. So I feel good about that.

Nan Li:

Okay. Understand. And also apparently from a regional perspective and then when Dow is looking at the next investment, apparently it is in one of the more cost advantaged regions, which looks like Canada. So I think we can save that question to a little bit later. We're going to have a bunch of questions on that project. And now moving to, I think this question you talk actually a lot about it already, but maybe kind of just given a generalist audience that we have, maybe just summarize, why do we think investment in Dow, especially now, is a good opportunity?

Jim Fitterling:

Well, I think for the long-term investors, they've always had an eye to the cycle. And when you've seen the stock price move down relative to the cycle and if you believe in the market is looking 12 months out, you've got to start thinking about when's the market start to project the turn. In our business, the challenge is sometimes getting in too late and missing the opportunity. And so as I mentioned, demand has bottomed and it's starting to come back a little bit in some of our key sectors like packaging and specialty plastics. We even saw some pricing power come back in the first quarter. I think those are good signs. The work that we're doing on the portfolio to transform it, to keep up with the demand from consumers and the population in general, which is to get your CO2 emissions down to make more circular products, I think is going to give us a leading edge.

And then like we did with our Texas project, back in the 2017 timeframe, we got a big first mover advantage by moving into shale gas. We were the lowest cost project at the time. We got up fastest and we were able to make nice returns on that project. We've made well north of 15% returns on invested capital on that project and paid back a huge chunk of that project before we've ever reached the down cycle. And we're attempting to do that very same thing with Canada right now, an investment decision this year. If you think about commodities prices, a lot of the inflation has come out of the commodities part of the sector. I'll leave copper alone and maybe some precious metals going into EVs. But if you think about steel, bulk materials, the things that are going to be necessary for us to build that facility, a lot of that's come out.

And so the timing on a project like that, you want to get into those now and then you want to complete them when you're moving into the next upcycle. And that's one of the reasons we did what we did with our cash during the pandemic is so we'd have the financial strength to be able to pull off a project like that, be able to fund it primarily out of cash from operations, get the timing on the cycle. And once you start to get your timing on the cycle right, then you're in a good spot to repeat that again and just get into that cadence.

What's going to drive our cadence is the IRA has come at a great time. So once we get through Canada and we take 20% of our ethylene capacity to net-zero, then we would look at the next US Gulf Coast becomes an ideal candidate for another project and like we're doing in Canada, that cracker will be lowest cost first quartile asset. You come down and do that in the US Gulf Coast and then retire an asset that's maybe in the third or fourth quartile and you get a huge CO2 benefit, but you get a big net cost reduction and every cycle, if you can lower that break even costs like we've been doing, next peak is better than the last peak, next trough you're better than the last trough. You want to continue to do that and just ratchet up the earnings over time.

Nan Li:

Since we're on the Canada project already, so a follow-up question on that is the Decarbonize and Growth strategy. I think you also talked about it during the open remark, but just as a refresher, what is the current status on that one and also what are some of the upcoming key milestones?

Jim Fitterling:

Well, I think everybody here knows that the outside pressure is for the world to get to net-zero by 2050. And that's no different for people that drive the demand through our brand owners and for the products that we make product for. We're an energy intensive industry and about half of the natural gas that we use is used for power and steam generation or to fire the crackers in our plants. So when we launched our Decarbonize and Grow strategy, we included in that, and it's in our investor website, a chart to get to 2050. And this is a site by site chart, top 25 sites around the world. What does it take us if we're investing on a regular basis, a billion dollars a year to decarbonize the assets? Essentially we can get 95% … 96% of that CO2 reduction through investments in technology. Obviously we're not going to do those investments at any cost. We're going to get a return on those.

But to line them up in a way that we're making no regrets moves like the Canada move. Get that on, raise our earnings profile, then move on to the next move. It does require a couple of things that are important. Price on carbon, obviously there's got to be some recognition that there is a price for the carbon emissions. Canada's got a price on carbon that helps. The IRA in the US added at least one port, what I would call a proxy for a price on carbon through the 45Q allowance for CO2 that goes into enhanced oil recovery. It raised it from $45 to $85 a ton. So that's kind of the proxy price on carbon in the US right now until we get something bigger than that. And those two things are necessary. We've got to get permitting for carbon capture and sequestration. Canada has an existing carbon trunk line already. It runs within a few kilometers of our site, so we're contracted for that. You've got to have access to feed costs. Canada has always had an Alberta advantage.

Canada's a different market than the US. When we make an investment in the US, we take market risk because we're assuming that the whole market's going to continue to grow and we're going to produce and that we can get access to the market. So our strategy in the US is through multiple touch points into the market, midstream producers all over the place, just a whole host of contracts to manage that exposure. In Canada, it's more structured. So when we go into a project like this, we have a line of sight to 20 or 30 years of what the cost position's going to be on natural gas. You could say on one hand we're locked in, but we're locked in at really good rates for that time period. And so by upping our exposure, kind of tripling the size in Canada, we've really taken the cost position for the whole world down. We can come down then and do that in the U.S. again. It'll be good. We have line of sight on the Canadian project based on what we learned out of Texas to design it and build it for less dollars per ton than it costs us to build Texas-9 and derivatives. We have to add back a little bit because we have to build hydrogen production to fire the furnaces. But with the price on carbon and some incentive on the capital for the new technology, really tax incentives to make those investments, then we'll see the return on that investment. So I feel really good about Canada project. Obviously, we've got some work to do this year still to get final investment decision. And then I think IRA has teed us up well to be able to come right off of that and start looking at U.S. Gulf Coast.

Nan Li:

Understand. So it's basically from the business fundamentals, the economics is already very good over there and part of the infrastructure is also there and plus the carbon credit we're getting.

Jim Fitterling:

Exactly. I sometimes think that people think in business we're just looking at following the trend because it's the trend. But we know we have to make a return on investment, first and foremost for our shareholders, and we have to follow that trend. If we don't follow that trend long-term, we might lose our license to operate. So where's the sweet spot to be able to do that? And what investments do you

make at what time? Which markets are ready for you? Some markets may not be ready yet. They may not have all the policies in place or all the systems in place to make it happen. But I think we're starting to see things line up in the right direction.

Nan Li:

Understand. So we just talked about we are preparing for the capacity expansions in the future for the demand to come. So in terms of the demand growth for Dow, maybe in the next three to five years, what are some of the biggest drivers? Could be businesses, regions.

Jim Fitterling:

Silicones business will be one of the fastest growing in terms of relative to GDP. Tremendous diversity of end uses from everything related to housing and middle class income growth, electronics, [*corrected by the company*] EVs use two to three times the amount of silicones as an internal combustion engine vehicle. Because of the temperature range and the stability of those products over time, you're tending to see them move into more and more applications. So most people don't think about it, but LED lighting, which is high demand because of the lower energy costs, silicone is used to encase all of that LED lighting. So that's a very high growth demand area. Medical applications. You look at consumer goods, fast moving consumer goods, all really good growth areas there.

Next I would say packaging, especially plastics and functional polymers. I mean, we have one of the world's leading technologies for solar panels for the top layer on solar photovoltaic panels out of our performance, our functional polymers business in P&SP. That's growing well. Packaging continues to grow well. It's in a sweet spot for us because we know how to design and make products more circular. We're making a lot of investments to get that 3 million [metric] tons of recycled content, which our brand owners want. They have high demand for that. So I feel good about that.

Industrial solutions. We've had two major alkoxylate facilities come up and be sold out within months and they've both exceeded return expectations. I think you're going to see more announcements in that space because the demand for those downstream products is so strong and the brand owners need more and we want to try to grow with them and get the footprint differentiated a bit for them to be able to service them. So I think those are the top three areas right now.

And we'll continue to focus on balancing and polyurethanes, get the balance between PO and isocyanates right. This year we bring on MDI distillation capabilities in Freeport, Texas. That allows us to tighten up the footprint a little bit by taking our La Porte, Texas facility out. And so we've got Freeport now as a much stronger polyurethanes hub. We're going to take out some PO capacity that is higher cost and was pointed at the merchant market. We're really not in a position to do that in the future and get that balanced a little bit better.

Nan Li:

Understand. And some of the applications you mentioned are tied to electric vehicles. So before electric vehicle, I know that Dow has some applications or some of the end markets into automotive, the ICE cars, internal combustion engine cars. So when we talk about the sales on the EV cars and how we try to quantify how much more sales or margin can we get per EV versus ICE?

Jim Fitterling:

I'll have Pankaj and the team put something together in terms of dollars per vehicle and margin. I don't think I have that off the top of my head. I'll give you some examples though. In a typical automobile internal combustion engine vehicle, our focus is on things like noise, vibration, and harshness in the

vehicle. It could be materials that are in the construction of the vehicle that make the cabin quieter. It could be foams that are in the doors and in the pillars of the chassis [*corrected by the company*] that both make it quieter and safer. It could be in coatings that go underneath the undercarriage of the car, like they would go into an appliance. So liquid applied sound dampening coatings that quiet the ride of the car. It's in comfort areas like in the interior of the car. It's in seating, obviously. And it's in the electronics portion.

When you move into EVs, because noise, vibration, and harshness [reduction is so much more critical there, you've got no engine noise and the focus is really more on making that ride as good as possible. We got to get more out of the car. So we get pulled into a lot more applications for noise, vibration, and harshness [reduction. You have so much more electronics on the car. Even before you get into autonomous vehicle capabilities, you've got to eliminate all the crosstalk between all the electronics that are in the car. The way you do that is with silicones to encapsulate those different devices. Silicones encapsulate them in the case that they're exposed to the weather from outside conditions. They protect that unit. They protect it in a wide range of heat. We can go up to 500 degrees Fahrenheit with silicones. So it doesn't matter if you're in freezing cold or super hot desert southwest in the U.S., you can handle the conditions and their dielectrics so they don't carry those frequencies across that might interfere with other electronics.

So they're in high demand. They also help dissipate the heat out of the battery packs and they help seal off the battery packs so that oxygen can't get in there, which is a fire hazard in those. So a lot of applications. And that's why I say, two to three times as much silicone in a EV as there is in internal combustion engine vehicle. About 28% of the car, maybe in some cases as much as 40% of the car, are plastics versus what might have been steel before. And you'll hear EV owners talk about the need to reduce weight. I mean, they have as big a weight issue as an internal combustion engine vehicle. If we can keep the weight of the car down, even if they can go to a flat or fast charging battery packs and keep the weight down, that helps them with range, which is one of the biggest issues. And so that's enhanced [demand just like the noise, vibration, and harshness [reduction has] enhanced [demand].

But you can't give up structural integrity. And that's, I think, one of the places where Dow's always been great is finding that balance between light weighting, but having the structural integrity. Can we design the polymers that they need to be able to do that? Can we help them? If they decide to go away from steel to something lighter weight in the frame, can we help them with something inside the frame that might reinforce the strength of that vehicle? Obviously not create any other hazardous conditions, but to make those combinations.

Nan Li:

And for the light weighting part, which part of the businesses that are impacted by this or is going to be boosted up?

Jim Fitterling:

Plastics, polyurethanes, silicones all have elements of that. So you would see parts of it everywhere.

Nan Li:

And also you mentioned silicones a lot of times during when you're talking about all the additional demand due to EV. So have we tried to estimate how much higher the growth is for the silicone portfolio within Dow?

Jim Fitterling:

Yeah. I think on a times GDP standpoint, if I take out the most commoditized part of the business, the fastest growing parts of silicones are growing at two times GDP. Whereas a business like P&SP – Packaging & Specialty Plastics, is growing about 1.4 times GDP. And typically, the more commoditized the business gets, the closer we get to GDP rate type growth. I would say if you looked at architectural coatings today where we have really high market shares because we're the leader in waterborne architectural coatings, those tend to be more towards GDP type growth levels. Similar in polyurethanes. Polyurethanes is probably between 1 and the 1.4 [times GDP] of P&SP.

Nan Li:

Okay. Understand. I think we're probably already at the top of the hour. Just one last question. So which part of the Dow story do you think that are most underappreciated right now?

Jim Fitterling:

The financial strength of the company vis-a-vis its capital structure and its balance sheet. The way we're positioned leading into this next upcycle. The breadth of the portfolio and the cost positions that we have around the world. So even in this environment, if you think about this year compared to 2020, remember in the pandemic, we saw oil prices go to $20 [per barrel]. The oil to gas spreads were relatively small. They're higher now, but we're weathering the headwinds of Europe, which is 30% of our sales.

So the overall portfolio improvement is there. And I think as you see the market come back, you're going to see that show up. Remember, we delivered over $12 billion, $12.5 billion dollars of EBITDA. That was our promise to the street at spin that's what the portfolio could deliver. I mentioned today we're going to add $2 billion to that by mid-decade through those faster payback investments that I mentioned, like alkoxylates and industrial solutions, like downstream silicones. And then we'll add another billion [of earnings] on that. The first phase of Canada comes up in 2027 and then the rest will come up between then and 2030. That's another billion dollars, maybe even a little bit north of that by 2030. So that would take the peak of the earnings up to $15.5 billion dollars. And I think people that might be thinking, "There's not another cycle coming," I think there is, and I think it's because of the decarbonizing growth strategy and the cost positions that we're going to have.

Nan Li:

Understand. Thank you so much, Jim, for joining us today.

Jim Fitterling:

Thanks very much.

Nan Li:

Thank you so much to the audience as well.