Alcoa Corporation

Investor Day Presentation

Tuesday, November 9, 2021,
9:00 AM Eastern

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Jim Dwyer Hello everyone. And welcome to Alcoa's Investor Day live presentation and question and answer session. I'm joined today by Roy Harvey, Alcoa Corporation President and Chief Executive Officer, William Oplinger, Executive Vice President and Chief Financial Officer, as well as other members of Alcoa's executive team. Tim Reyes, Executive Vice President and Chief Commercial Officer, John Slaven, Executive Vice President and Chief Operations Officer, and Executive Vice President and Chief Innovation Officer, Ben Kahrs. Today's live presentation is a summary of seven recorded video presentations provided by these speakers available starting yesterday via our website, www.alcoa.com. Transcripts of each presentation and the complete presentation deck are also available on our website. After today's summary comments by Roy and the team, we will take your questions.

Before we start, I want to note that today's discussion will contain forward looking statements relating to future expectations and events that are subject to various assumptions and caveats. Factors that may cause results to differ materially from these statements are included in today's presentation and in our SEC filings. In addition, the reconciliations for non-GAAP measures used in today's presentation to the most directly comparable GAAP financial measures can be found in the presentations' Appendix. Finally, as previously announced, the presentations discussed today are available on our website. With that, here's Roy.

Roy Harvey Thanks, Jim. Hello everyone. Welcome to Alcoa's Investor Day presentations. We are excited about our future and proud to share what's next for Alcoa. This month marks our five-year anniversary as a standalone company, focused exclusively on the upstream aluminum industry. In those five years, we've made significant improvements to strengthen Alcoa and today we are stronger than we've ever been since our inception on November 1, 2016. And this hard work has us very well positioned.

It's an exciting time for Alcoa and the aluminum industry. Markets are stronger and predicted to stay that way for longer. Global dynamics are shifting too to place a greater emphasis on sustainable production practices, all factors that favor Alcoa. Yesterday, we made available a series of videos, transcripts and a comprehensive presentation deck that speak to our accomplishments. Today, we will provide a brief overview of those presentations and answer your questions. Now I'll get us started with this review. And I'd like to begin with some foundational items for this company.

Our success is rooted in our values. These have been consistent since our launch. We act with integrity, operate with excellence and care for people. This month we shared with all of our employees an additional fourth value that exemplifies our character. This additional value is, lead with courage, and it too will help guide our actions. Already, we've acted with courage in tackling difficult obstacles and challenges that challenge the status quo. That's what we'll continue to do to move

us forward. Meanwhile, our strategic priorities remain. We are focused on reducing complexity as a low-cost commodity producer. We will work to drive returns and increase margins over the long term, and we will advance sustainably through improvements to our portfolio and for a sustainable future. As the company that traces its roots to the discovery of aluminum, 135 years ago, Alcoa has a vision today to reinvent the aluminum industry for a sustainable future.

We intend it to help solve some of the industry's biggest challenges. This vision aligns with our purpose. We exist to turn raw potential into real progress. We convert that raw potential into real progress across our segments. In Bauxite, we are one of the world's largest miners and enjoy a first quartile cost position. In Alumina, we are the world's largest producer of third-party smelter grade alumina with the lowest carbon intensity in the business. Our third segment Aluminum is currently the most profitable and we have roughly 78 percent of our smelters operating on renewable power, and a goal to increase that percentage further. In the past five years, we have made significant strides to create a strong company. We are creating a portfolio of assets that can compete through any cycle. Importantly, our financial house is in order. We issued debt at favorable rates and redeemed higher interest rate debt early.

We have improved the funded status of our pensions and reduced OPEB liabilities. Also, in two years, we successfully raised more than $1.1 billion of net cash proceeds through the sale of non-core assets. We've also modernized labor contracts, set production records, enhanced our global safety programs and certified many of our locations to the Aluminium Stewardship Initiative. Commercially, we launched our Sustana™ line of low-carbon products, which today is the industry's most comprehensive. It includes, for example, the world's only low-carbon smelter-grade alumina brand, EcoSource™. Also, we are making progress with our ELYSIS™ joint venture that is working to commercialize breakthrough technology that eliminates all greenhouse gases from the traditional smelting process. Through this R&D work, ELYSIS has already produced commercial grade aluminum that has been used in some applications, including the wheels for the Audi e-tron GT and for a model of Apple's MacBook Pro.

Last week, ELYSIS announced that it is now producing metal free of direct greenhouse gas emissions using full industrial design. And as you'll hear again today, we have other technologies in our pipeline, including a process to reinvent aluminum scrap processing. Also, we are working on a combination of technologies and processes that will design the aluminum. In summary, I'm excited about what we've prepared for this investor day and I look forward to your questions a bit later, but with that, let's now turn it over to Tim Reyes to discuss our view of the markets and our projection of positive momentum. Tim, please go ahead.

Tim Reyes Thank you, Roy. When we look at the market dynamics, we expect to see strong aluminum demand. However, with a more constrained supply going forward, this year has been quite a strong year. The aluminum price at its peak this year traded at levels we haven't seen in more than a decade and double relative to the low point that we saw in the second quarter of 2020. In addition, regional premiums are being influenced by strong demand, supply chain delays, and higher transportation costs. We continue to see positive GDP in industrial production growth across the world's leading economies, which really supports strong aluminum demand across all major sectors. Strong demand is also being supported by China's emergence over the past two years as a net importer of primary aluminum. In 2021, China has curtailed more than two million tons of annualized capacity due to power shortages and its enforcement of policies related to energy and environment.

These curtailments represent one of the largest supply cuts in the aluminum industry that we've ever seen, particularly given that they're occurring during a year in which we see such strong demand. And these supply dynamics are not only occurring in China. There have been recent reports of smelter curtailments in Europe due to the energy shortages and high-power costs that we're experiencing there. So, to reiterate, we see positive demand trends as well as structural changes on the supply side that may impact the pace of supply growth compared to recent years. And with that overview, you let me turn it to John Slaven.

John Slaven Thanks Tim and hello everyone. I'm really excited to share with you the work we're doing as operations to make our business safer, more sustainable and more profitable. I'll start on the right with our highest priority, which is safety. Within safety, our major focus is on preventing fatalities and serious injuries. The single fatality we had since 2017 is one too many, and we are working diligently to further strengthen our safety leadership and systems. We're also focused on enhancing our social license to operate, creating shared value with our communities and managing our environmental footprint, and controlling key risks. Robust social performance management plans enable us to maintain long run community and stakeholder support, which is essential as we mine in environmentally sensitive areas. We are effective in managing our key operational risks, the most significant of which is the storage of bauxite residue. And we committed to fully comply with the Global Industry Standard for Tailings Management.

So, moving now on to how we deliver. The core process outcomes of increased... [technical difficulty] Alcoa business system is a holistic Plan, Do, Check and Adjust management operating system, which enables focused and sustained continuous improvement. This includes a strong people development focus, which is the critical enabler of effective engagement. These differentiated capabilities enable us to continue to significantly improve our business over time. Creeping production volumes, reducing consumption of energy and key raw materials, and improving our labor productivity. I'm extremely proud of our global team working safely,

sustainably and smartly to deliver today and improve tomorrow. We've accomplished a great deal over the past five years, and we are very well positioned to deliver so much more in the future. I now hand it back to Tim, who will share more about our growth opportunities. Tim.

Tim Reyes Thank you, John. Let me summarize how we look at growth. First, we look at all opportunities to grow, but three areas that I want to highlight are creep and expansion projects of our existing assets, extension of our core segments and developing and deploying new technologies that will reinvent the industry. We have opportunities to grow in all three segments and decisions we based on several factors that include projected operating costs, capital requirements and market conditions.

New technologies under development, like the exciting projects that Ben and John are going to cover today, will help us advance our sustainable mission as well as deliver cost improvements. Additionally, we continue to develop new product solutions and extensions of core segment such as with high purity alumina and our Sustana line of green alumina and aluminum products that Roy's already mentioned. With that, let me turn it to Ben Kahrs.

Ben Kahrs Thank you, Tim. I'm very excited to talk to you today about Alcoa's breakthrough R&D projects, how they strengthen performance as well as how they address the global need to decarbonize an important value chain. Aluminum is a key material of construction in multiple industries, but the initial CO_2 intensity is a problem that must be solved for a net zero future. In 2020, Alcoa's mine to metal carbon intensity was seven point two, which is 58 percent lower than the global average. The major difference that separates the carbon intensity of the value chain is the dependence on coal fired power for those smelting and refining, especially for the growth in the last 10 years. Alcoa's three key projects are the ELYSIS joint venture, our Refinery of the Future, and ASTRAEA™. ELYSIS will be the first inert anode technology which meets purity requirements, is deployable for both retrofit and growth, enhances volume and OPEX cost, and lastly eliminates all direct CO_2 equivalents from the smelting process.

The Refinery of the Future is a program with a combination of innovations. The program aims to provide a modernization capability for existing refineries as well as take a step change in capital efficiency to support future growth. In addition, the two signature components known as mechanical vapor recompression and electric calcination target to reduce 100 percent of CO_2 equivalents when combined with a renewable power grid. Lastly, Alcoa's scrap purification project, ASTRAEA is designed to use any scrap stream regardless of alloy combination and purify it to the P0101 standard. With the growing importance of post-consumer recycling and the broad array of alloy combinations in the market, we believe that this project will provide Alcoa with a platform to compete in an important market in the future. I'm very proud of the innovation projects developed by the Alcoa team, and I look

forward to discussing them with you in the future. Now I'll hand it to Bill Oplinger to talk about capital allocation.

William Oplinger Thanks, Ben. Hopefully you've all had an opportunity to watch my full presentation. If you haven't, I would recommend that you take look at it. I'll hit on a couple of key points here this morning from the presentation just to review. First, and this is an area we don't really talk that much about, but we designed the company with world class corporate governance. We designed it from the start back in 2016 and we've maintained world class governance today. Secondly, by now you should all know that the balance sheet's in significantly better shape than when we originated. Pensions are funded at 90 percent and we have minimum mandatory contributions going forward. Proportional net debt is below our target range and we have no material maturities before 2027. So, given that we're tweaking our capital allocation framework in a couple of areas.

First, we want to maintain a strong balance sheet, and that's important. We've strengthened the balance sheet considerably over the last five years. But now I would say we're more focused on the other three levers, and let's not forget what those levers are, cash to stockholders, repositioning the portfolio, and positioning for growth. Note that we've changed that last bullet to say, positioning for growth, because we really don't have a lot of shovel ready projects in 2022. But as you've seen from the other presenters, the other presentations, we have significant opportunities for value creation in 2023 and beyond. Given that we've provided a three-year view of Capex, and we've increased our expectations for sustaining capital for the next three years. A couple of factors are driving that. Really, the big pieces of that are increased spending on required impoundments and mine moves, and you should keep in mind that both of those are in the AWAC business so that will be funded roughly 60 percent by Alcoa.

And then on top of that we have put out a view of $75 to $100 million of return seeking capital. I want to point out though, remember we use very high hurdle rates for those small return seeking projects, and we execute only on those that the cash flows allow us to. And then lastly but most importantly, we talk a lot about technology and growth opportunities and two things I really want to emphasize here. First is we have built in optionality and deliberate stage gates in every one of those growth opportunities. In each of those programs we expect that we will only invest when those milestones are met.

Secondly, many of those opportunities should have substantial environmental benefits moving us toward our net zero ambition. But more importantly, we also believe they'll be financially attractive and provide a suitable return. So, as some of the others have said, in summary, we've made tremendous strides over the last five years and we've positioned the company for success going forward. And I'm very excited about what the future holds for Alcoa. So, let me turn it back over to Roy.

Roy Harvey Thanks Bill. Before we start the Q&A session, I would like to weave together the presentations that we've summarized, and why we are convinced we are on the right path for our company and its investors. Today Alcoa is strong financially, operationally, commercially, and ready to not only survive but thrive throughout the commodity cycle. As we look ahead, aluminum is the metal for a sustainable future. While the world is calling for more aluminum, it is also calling for it to be for it to be produced in the most responsible and sustainable way. The dynamics of today's aluminum market are already rewarding producers, like Alcoa, that have low carbon intensity. Today, Alcoa is uniquely positioned as the world decarbonizes. We are trusted to mine bauxite in some of the world's most special places. In Alumina, we have the world's lowest average carbon intensity, and in smelting, approximately 78 percent of Alcoa's fleet of smelters is powered today by renewable energy sources and we're working to boost that percentage.

But we are not stopping there. We have a technology roadmap that represents an array of next generation solutions that can significantly reduce emissions across the upstream value chain and concurrently generate significant stockholder value. Our Refinery of Future redesign and our ELYSIS zero carbons smelted technology are R&D projects that not only aim to reduce costs and improve efficiency, but also target complete reduction of greenhouse gas generation from their respective production processes. While we still have much work to do before we complete these projects, we are excited about their prospects and progress. We are also focused on recycling and resource efficiency. We believe that our ASTRAEA metal purification process, as an example, has the potential to fundamentally and significantly change how low-quality post-consumer aluminum scrap can be recycled. Our ASTRAEA process can create high purity aluminum that far exceeds the purity of commercial grade metal produced in a smelter.

Finally, stakeholders are increasingly demanding responsibly produced aluminum. We are proud of our relationships with our stakeholders, ensuring our social license to operate. To sum it up, at Alcoa, we trace our roots to the innovation that allowed aluminum to be produced commercially. Today, we are leveraging our products, processes, and people to realize our vision to reinvent the aluminum industry for a sustainable future. I'm excited about our history, what we've accomplished over these past five years, and what we will do as we move forward in alignment with our vision and purpose. Jim, let's now kick off the Q&A session.

Jim Dwyer Thanks, Roy. Let me remind you that there are two ways to ask questions. On the telephone line, press star one, to enter the queue and if you're watching on the webcast, click on the “ask a question” button at the top right-hand corner of the webcast to send a written question via chat. So, we'll pause just a moment to assemble the queue.

Bill, I think you had already covered this question, but there was a question regarding the amount of capital expenditures for the coming three years. If you'd like to answer that one while we're getting the phone queue straightened out.

William Oplinger Sure, Jim. That's a question that I'm guessing is potentially on some investors' minds. We're showing a little bit of a ramp up in 2022, further ramp up in 2023 and 2024. We've told you before, we've told many of you, Capex in this business can be lumpy. And we are seeing a time period where a number of large projects are coming to fruition and at the same time. Just to give you an idea of what some of those large projects are, we got two mine moves going on in the next three years. One's in Huntly and the other's in Juruti. We have impoundment spending, fairly sizable impoundment spending, in Brazil at our Alumar facility, and to some extent in Western Australia. And then the third is we're investing in some milling capacity at Pinjarra.

Those projects, that spend, I think it's important for you to remember we're investing in tier one first decile type plants around the world. It allows us to continue to run those plants successfully and the investments are made with the highest regard for EH&S. So, I think it's important to keep in mind that we have that spend in the next three years, and it will solidify our position in the Bauxite and refining business as a first quartile provider.

Jim Dwyer Thanks Bill. Now, we have just a follow up question on that from another person on the webcast. Can you give us an idea of sustaining Capex after the next three years?

William Oplinger Not at this point, the view that we've provided is for the next three years. Beyond that, we'll update you as we go along. Really, at this point, we have those large projects that we're focused on delivering over the next three years.

Jim Dwyer Tim, I think this one is probably for you. How exposed is Alcoa to commodity prices? With Alcoa expanding capacity how is Alcoa and the broader industry ensuring there's no oversupply in the market?

Tim Reyes Yeah, so in terms of our exposures, I think it's pretty clear from what we report that we remain exposed to key commodity prices, and we provide information that shows roughly how close to market we price our products. And that's going to be largely true also on the supply side or raw material side of the business as well. So overall, we typically remain exposed to pricing. Of course, we always look at the exposures that we have and consider whether or not it's appropriate time to take any action for specific reasons. But generally speaking, we keep our exposures. And sorry, Jim, the second part of the question?

William Oplinger Tim, how the world handles some of the growth and whether that will lead to overcapacity.

Tim Reyes Yeah. Well, growth is a good question today because we've seen real change on the structural side of the business. I mean, obviously we've seen China as the area where we've seen the majority of the growth over the past decade. And it really does look like on the smelting side that we're seeing structural changes with all of the measures that China's taking with respect to the environment. Specifically speaking, we're starting to see China at a national level set ambitions to reduce carbon overall, setting a carbon peak for the country in 2030, as well as carbon neutrality in 2060. And the non-ferrous industry specifically is setting a soft target to peak CO_2 emissions by 2025. There are other measures in place like the Dual Control system, which is measuring both carbon intensity per unit of GDP and reductions targeted by 2025 of 18 percent, also reduction of energy consumption per unit of GDP versus what we see this year with a 13 percent reduction coming by 2025.

And of course, in the aluminum industry specifically, there are some key measures such as the 45-million-ton cap on production that China set as well as a reduction in preferential power rates, which we're already starting to see kick in. So, I think there's quite a number of measures putting in place in China specifically, which will contain smelter growth largely due to energy emissions.

And outside of China currently, we do see projects in the pipeline but in total, we only see enough projects that are meant to meet the demand growth for primary aluminum over the course of the next decade. And I think the main issue there is obviously one, questioning whether or not those projects will all come to fruition to meet that growing demand, and it also assumes that there are no existing smelters that would decrease. So, in short, on the smelting side of the business, we see a lack of general projects in the pipeline. And of course, with the push toward lower carbon products overall, that also is going to weigh on decisions to grow in the future.

Let me turn a bit to the Alumina side and talk a bit there. We see a little bit of a different picture in the pipeline for Alumina growth projects, where it looks like there are enough projects in the pipeline to meet growing demand over the course of the next decade. However, there is a big caveat there and that's that the majority of those projects in the pipeline, like 30 of 32 million in total, are all coal based, are all backed by coal-based power. And I think the direction that the world is going in and how it's moved over the course of the last year really starts to put in to question the pipeline of refinery projects that exist today.

Jim Dwyer Thanks, Tim. I believe we've gotten the phone issues sorted out. Let's try again with Emily Chieng from Goldman Sachs. (silence)

Operator And once again, if you'd like to ask a question that is star one. We'll open the line of Emily Chieng of Goldman Sachs. Ms. Chieng, your line is open, please check

your mute switch. Ms. Chieng, your line is open, please check your mute switch. And we'll move next to David Gagliano of BMO, your line is open.

David Gagliano Hi, can you hear me?

William Oplinger Yes. Thanks David.

David Gagliano Anybody hear me?

William Oplinger Yeah.

David Gagliano All right, perfect. Great, excellent. So, I just wanted to ask a couple questions on a couple of fronts actually, on the capital spend commentary. Can we get more detail on the specific buckets that you highlighted? How much capital is actually going into the impoundment spending bucket versus the mine moves bucket. And just to clarify, the figures on slide 77 are 65 percent of the total spend, is that correct? That's my first two-part question.

William Oplinger So let me address your second question. The capital numbers on the slides are on a consolidated basis. So, as you know, Dave, when we spend capital, it's recognized at a 100 percent basis and comes out of the dividends. So that's a 100 percent basis. The note at the bottom of the slide references that 65 percent of the sustaining capital will be in AWAC and 50 percent of the return seeking capital will be in AWAC. Does that answer your question, your second question?

David Gagliano Yes. Thank you for that clarification.

William Oplinger So let me give you some ideas and this is not meant to be totally inclusive, but the mine moves are right around over the course of the next three years are probably around $150 million. The tailing ponds and the RDA spend, I don't have a total number in front of me, Dave, but it's probably also in the 100 to $150 million range for those projects.

David Gagliano Okay. That's helpful, thanks. And just in terms of beyond 2024, I know it's a little difficult right now but is that 550 million of sustaining Capex a reasonable assumption beyond 2024, based on what you know as of today?

William Oplinger As of today Dave, when I look at the capital spending and just a caveat here, you know we've been able to effectively manage our capital spend over time. And we manage that spend based on what current market conditions look like, our ability to fund it. When I look out at '25 and '26, that 550's probably a pretty good number. And then the second half of the decade goes down substantially, back down to levels that we've seen more recently over the last few years.

David Gagliano Okay, that's helpful. Thank you. And then just two really quick other questions. On the primary aluminum side and I apologize, we did lose some time on the

phone so this may have been covered. But can you address, obviously there's a positive outlook from Alcoa's perspective, from a longer-term perspective. Can you address Alcoa's plans to grow its primary aluminum melting business beyond the capacity creep and restarts?

Jim Dwyer Hey, Roy, if you could take that one as it's more of a strategic one.

Roy Harvey Yeah. And Dave, I think it's a great question given the market conditions that we're finding today, and I think the answer lies in what comes next with ELYSIS. And so, when we step back and we think about the difference between conventional technology that has carbon emissions, and then the promise of ELYSIS with zero direct carbon emissions being connected over to renewable power. And the potential for both cost efficiencies because of eliminating the whole anode process, as well as trying to drive capital efficiency as well. Our future very much depends on the success of ELYSIS, which to me is a groundbreaking breakthrough technology that has so much potential.

And so, when we look to the future, the answer is very much tied into ELYSIS and also tied into the developments of the market and how we see some of those supply demand fundamentals also coming through, which Tim covered very well in the prior question. So, we are putting all of our efforts and all of our concentration on making ELYSIS very successful, and on meeting all of those requirements, those stage gates that Bill referred to in his opening comments. To make sure that it can be successful not just as a low carbon technology, but also really successful as a great financial opportunity for our stockholders, for our company, and to actually see growth inside of the aluminum business.

David Gagliano Okay, that's helpful. And just considering the timing around ELYSIS, is it reasonable to assume that Alcoa will not be adding primary smelting capacity or announcing new primary melting capacity additions before 2024?

Roy Harvey I'll take that one too. I know it gets down into some of Ben's territory, but I think the way to look at it is that we're scaling up the process right now. In the ELYSIS announcement we talked about starting new design work for that first essentially demonstration or first real scale plant. So that timeline leads us up into what we've been talking about before in 2024. And so, for us, what we said is we're not going to brownfield or greenfield any of conventional technology. And so, we can start considering, where do we want that first installation of ELYSIS for Alcoa?

But we're going to do that in conjunction with how that ELYSIS progress is made. And so, when you connect those dots, I think the answer to your question is a simple yes. We need the technology to work, we can start doing some of the design work, some of the work of governments to make sure that we can have a great cooperative agreement and best price of renewable power on the planet.

And we can be working on those things in parallel but in the end, that first real greenfield or brownfield or retrofit opportunity to put ELYSIS into place would come once it's been demonstrated.

David Gagliano Okay, that's helpful, thank you –

William Oplinger And Dave, if I could just add on a really, really quickly. In Ben's presentation is a comment that I think Roy just alluded to and that is, we're not going to build new Hall-Héroult plants. We're committed to ELYSIS and so we will creep the existing plants that we have, but brownfield and greenfield won't be Hall- Héroult. And that's an important statement for you and everyone to understand.

David Gagliano Very helpful, thank you.

Jim Dwyer Why don't we take another question from the chat line. Ben, and this is along the lines of ELYSIS as well. And the question was, do you plan to license ELYSIS technology to help the world decarbonize?

Ben Kahrs Well, the simple answer is yes. So, the ELYSIS joint venture was put together to both industrialize and commercialize inert anode smelting. And Alcoa and its partners wanted to have that for our own interest, but also to commercialize it for third party sales. Going back to the presentation, if you think about the targets that are set forth for the aluminum industry, 75 percent of all the CO_2 in the entire industry has to be out by 2035 for us to be consistent with the net zero one point five-degree scenario. And then by 2050, 97 percent of it has to be out. So, unless there's an effective carbon capturing storage, it's a fundamental imperative for every aluminum producer in the world to convert to inert anode smelting. And so, our intent is to license that technology.

Jim Dwyer Thanks, Ben. And while we're on the topic of ELYSIS, there's a question about how reliable is the ELYSIS production at the R and D center, and are Apple and Audi, which I assume they meant Ronal for our purposes, paying a material premium for ELYSIS?

Ben Kahrs Well, I'll leave it to Tim to comment on the premium, but we are very excited about the stability and the robustness of the inert anode solution. If you think about the partnership between us and Rio Tinto, we brought a fantastic technology along with the skills from both parties to bring forward the most robust sale, the most robust solution. So, we're very excited about that and if you look at the recent announcements by ELYSIS, we've actually moved up our timetables a bit in terms of when we would start some of the engineering for certain things. We're going to bring forward the technology package starting in 2024 for adoption or transfer to a customer and expecting hot metal for the first customer starting in roughly two years after that. So, we're very bullish on the robustness as a solution, and that's why we've made the statements we have about our

confidence in the technology. And Tim, I'm not sure if you want to comment on the commercial aspect.

Tim Reyes Yeah, sure. I won't comment on specific transactions or prices, but we have seen modest premiums for low carbon products that we've put into the market and sold. And just to remind you all that EcoLum™ is our low carbon product, which is four tons of carbon per ton of aluminum, but it's also inclusive of scope one and two emissions from smelting, refining and mining. So, it is one of the lowest carbon products that exist out in the marketplace. The market is still relatively small, it's growing. So, 2021 was certainly a year where we saw a step change, not just in interest, but also in volume that we were able to sell into the marketplace. We also put out a new product, low carbon alumina, EcoSource, which we also have made sales of. So, we've had quite a year selling our low carbon products this year. And when we look at the overall market for low carbon, again, it's evolving but we think probably in total, there's roughly eight million tons or so of capacity that meet the definition of EcoLum that we have today.

And we would be more than 20 percent of that market in terms of what we're prepared to offer. One other point I would make, China has smelters and have been growing smelters based on renewable power. And today, that's somewhere now north of five million tons or so. But the issue that we see in China with respect to driving to a much lower carbon position is that the refining system is high carbon, mainly based on coal. So, at this point, we have a strong position in terms of having the lowest carbon products. We have the most comprehensive suite of products and certainly 2021 has been a year where we've seen a bit of a step change in terms of the interest in these products, as well as the volumes that we're actually selling into the market. Modest still but growing certainly at a much faster pace and certainly from our customer base, we're getting a lot of interest in ELYSIS today as well.

Jim Dwyer Thank you, Tim. Operator, let's try the phone line again. We can try Emily's line and see if she's connected now.

Operator Certainly, Emily Chieng, your line is open.

Emily Chieng Good morning, everyone. And can you hear me this time?

Operator Yes.

Emily Chieng Oh, great. Third time's the charm there. Well, thanks for taking the questions today. My first one is just on ASTRAEA. Thanks for providing some of the details on this new technology initiative. I appreciate that the recycling process is a lot less energy intensive than primary aluminum production. But how should we

think about the energy intensity of the purification process, and what plans do you have for this technology beyond pilot demonstrations in 2023?

Ben Kahrs Okay. So, first of all, the energy intensity of the process itself is a fraction of traditional smelting. And when combined with a renewable grid, therefore you're not making any carbon associated with that. But I would say a fraction on the order of 25 percent of what traditional smelting would be. And as far as the future of the technology or progress, we are intending to have a significant pilot ready for demonstration in 2023. That's our target. And we're working hard towards that goal and no other announcements beyond that time period.

Emily Chieng Great, that's very helpful. And then just coming back to the production creep and hopefully someone else hasn't asked this question, but when you think about the 400 to 450 thousand tons of additional smelting capacity from creep beyond the restarts of Portland and Alumar, what should we expect that timeline to be and perhaps which facility should we keep an eye out for in terms of that debottlenecking there?

Jim Dwyer Tim, do you want to speak to that one?

Tim Reyes Sure. Yeah, I'll take the question. Yeah, I think we did mention that the Alumar restart is part of that volume. So obviously, we're moving forward with Alumar which is 268,000 tons of production. Otherwise, the one thing I would say without providing the specific detail around where our creep opportunities exist, they all exist or will take place in plants that are already today, low carbon or producing EcoLum material. So, in terms of giving some input as to which locations we would be focusing on, I hope that gives you some background.

Emily Chieng Great. That's very helpful, thank you.

Jim Dwyer Let's try the phone line for Carlos De Alba of Morgan Stanley.

Carlos De Alba Yes hello, can you hear me?

Jim Dwyer Yes, go ahead.

Carlos De Alba All right, great. Thank you. Good morning, everyone. So, I just wanted to maybe follow up with Bill. Under the current framework, a capital allocation framework, Bill, how should we interpret a strong balance sheet? Can you give us a little bit of details there? And my second question has to do with the high purity alumina project. When I'm trying to work the numbers, it seems that unless you are able to get a significant spread over, smelter grade alumina, it's tough for the project to generate a positive IRR. What can you comment on that project and the pricing?

William Oplinger So Carlos, on the strong balance sheet, if you consider the capital allocation framework we've had historically, we had a targeted proportional net debt of two to two and a half billion dollars. We ended up in the third quarter lower than that. Given the strong cash generation that we're seeing in today's market, we'll end the fourth quarter even better than that. We continue to make progress on the pensions, although the pension contributions are pretty small over the next four or five years. And it's important to note that we really don't have any debt tranches that are even available to be repurchased until 2023 are repaid, I should say, until 2023. And no debt tranches coming due until 2027.

With that said, our balance sheet today is strong. And it was a huge focus over the last five years, and it's been continuously chipping away at the three pieces of the indebtedness. And so today, it's a strong balance sheet, where you've heard me say in the past that we target an optimal WACC. We will continue to target an optimal WACC, we don't necessarily target a rating. And as the market conditions stay the way they are, or even potentially improve, cash generation is very good, and therefore, the balance sheet just inherently gets a little bit stronger.

As far as the HPA question, I'll address it first and then Tim can give you a much more informed answer. If you're thinking about this as simply a spread over SGA, you're thinking about it the wrong way. This is a new product that has a set of pricing fundamentals that are completely separated from SGA's fundamentals. And so, the premiums over SGA, first of all, it's the wrong construct to even think about premiums over SGA, the pricing for the actual product itself is just fundamentally higher and better than SGA, but it is a small market at this point. So, Tim, do you want to comment further?

Tim Reyes Yeah, I think you gave a good start, Bill. It's an extension really of our non-metallurgical grade aluminum business, which makes up about six percent to seven percent of our overall, but it is a very different market. And there are two factors that make it attractive to us. One is the technology development, and this is where it's been important to have a partner like FYI Resources, who brings their technology, their flow sheet, to the project. But we do think we can enter a fast-growing market for HPA, for high-purity alumina, with a new low-cost technology.

And when I talk about the market for HPA, it is exciting because it fits with supporting decarbonization and the electrification in the world. And two fast-growing markets that are driving HPA growth projections over the future are LED lighting, where HPA is used in the manufacture of synthetic sapphires, and also in battery separators for batteries which are obviously attached to the growth in electric vehicles going forward.

But it is a very different market. We're talking about an initial, moving toward an initial production facility that's 8,000 tons. So that gives you some view as to how different it is from the SGA world where in total, we're putting out close to 14 million tons of alumina from our refineries.

Carlos De Alba All right, thank you very much for that. And just one more, if I may, in terms of the net-zero projects and those projects that helped you to decarbonize, when you talk about a suitable return on those, can you comment a little bit more as to what is the framework that you used to analyze this? Is it a threshold above and beyond or lower than for a traditional creep project site? I'm assuming you incorporate a carbon pricing on those, and can you talk about what sort of carbon pricing levels are you assuming?

Jim Dwyer Bill, do you want to speak to the financial impacts?

William Oplinger Sure. Carlos, first of all, we went out of our way to make sure you understand that we believe that the carbon reduction projects that we have in our pipeline will provide a financial return. And the way we look at those, is that we have a WACC of depending on what day it is, probably between nine [percent] and ten percent. We would be looking at a hurdle rate that's higher than that WACC. We will evaluate these projects financially. Now, it's important to understand that we're going to evaluate them with a carbon view also, but in the end, we're going to make investments that provide a return to our shareholders. And I believe that they will also help us get to our net-zero ambition.

And so, it's a really nice situation to have where we've got three, four, five great new technologies. When you think about ELYSIS and ASTRAEA and Refinery of the Future, that not only can meet our hurdle rates, but also provide the pathway to being net-zero. I don't know that there's a lot of companies out there that can as clearly as us articulate the fact that we will get to a net-zero ambition by 2050 with these projects. And Roy, I don't know if you wanted to add anything more to that?

Roy Harvey Man, Bill, I think you said it well. I'll make one additional comment. We're trying to solve for all of the above, right? It's the net zero is critically important to our planet. It's critically important to our industry, and it can be critically important to growth for Alcoa in the future. But we want to solve it to make sure that we can have a low-operating-cost facility, have competitive capital cost so that we can compete with all the other technologies out there, and at the same time be able to take care of this low-carbon new technology as well.

And like Bill said really well, I think we are uniquely positioned to be able to do this because of the people that we have, the technologies we've brought to bear, and the fact that this first pathway all the way from mine to a Refinery of the Future, down into ELYSIS, which is zero carbon, how we can connect these

things and turn it into a truly zero-carbon product inside of the entire aluminum industry. And so, again, all of the above, it takes a lot of great effort, but we have a lot of really great people that can help bring those technologies to bear.

Carlos De Alba All right. Thank you, Roy and thank you, Bill. All the best, it's exciting times.

Roy Harvey Carlos.

Jim Dwyer Thanks. Ben, we have just a related question that came in over the chat. And the question is what carbon price is required for ELYSIS smelted aluminum to be at cost parity with current technology? So, I think the insinuation is that ELYSIS is more expensive on a cost basis.

Ben Kahrs Okay. So, cost can be measured in two ways, so I'll break the two up. So, from an operating cost basis, ELYSIS without any carbon pricing is going to be favorable to Hall-Héroult. So, by definition, when you take out the carbon anode value chain, you take out all of the coal tar pitch, the calcined coke, your baked furnaces, your green mill, all of the energy that goes into it, all the emissions you have to capture and address. When you have ELYSIS and inert anode, all of that goes away, as does a significant amount of labor for the operation because of those. So, from an operating cost basis, you don't need any carbon pricing to have an operating cost winner, it's inherently advantageous.

From a capital cost basis, we set out targets three years ago that we wanted to have a winner in all three areas. We wanted to have a 15 percent OPEX reduction, we wanted to have 15 percent volume improvement, we wanted to have a 10 percent Capex improvement versus to have 15 percent volume improvement, we wanted to have a 10 percent Capex improvement versus Hall-Héroult. And we're on our path to the OPEX improvement, we're on our path on the volume improvement.

The Capex improvement is still our long-term target for ELYSIS. And we do expect in the near term to because supply chains have to be built to supply the proprietary materials and the equipment, the initial deployments would be higher on Capex. But we expect over time when you consider that a traditional smelter has a carbon plant, a smelter and a cast house, and with ELYSIS, you don't have to build the carbon plant. Again, it's inherently advantageous. So, we expect that long-term goal of 10 percent improvement to still be our target.

Jim Dwyer Thanks, Ben. Very good. Roy, here's one from the chat... Excuse me. Can you share your thoughts on upstream consolidation potential and inorganic investment?

Roy Harvey Yeah, I think from our perspective, and we talked strictly about Alcoa in the moves that we could make, we were cobbled together over a number of acquisitions in the past. And we've spent a lot of time over these last five years

trying to make sure that we have a portfolio that's fit for the future, that we have a cost basis that we can continue to improve long into the future. And so, we've learned a lot of lessons through that about how we can be successful and how we can make sure that our business is competitive no matter what's happening in the cyclical environment.

And I think many of you, as our investors, as our analysts, have been with us through a lot of that journey. And so, for us, as we look to the future and we see these changes in the markets and the fact that we have great opportunities on the technology side to actually reinvest and rethink about how we can build our plants to match that future, both competitive-wise from a cost basis, but also from a technology low-carbon area. I think that all comes together to say, hey, we have a lot of opportunities inside of our portfolio to grow, to solve the problems to grow and then to create value. We'll always look, if there are opportunities that come along, whether that makes sense for us. I think we have built up a lot of great muscles on how we can manage facilities that perhaps need to be fixed and that need to have this step forward to be able to succeed in the long term. But I think we've also tried to lay out a pretty exciting view of what we want to do inside of the portfolio that we have today. And that really very much is our focus.

When you think about the industry more in general, I think the story that we want to tell is one where we see a lot more constraints on the supply side as we see that decarbonization both of aluminum itself, but also the energy supply, et cetera. So, we're looking at a more on how we can see the positive developments in those broader industry fundamentals and how we can take advantage of that from an Alcoa perspective.

And so, for me, we'll always look at every opportunity, we'll think it through, we have a significantly strengthened balance sheet that gives us so much optionality. We've tried to sketch out for you what we have clearly in mind today, and we'll continue to do that. So, if our emphasis changes as we see that market developing, we'll continue to keep you up to date and up to speed on our strategic plans. Thank you.

Jim Dwyer Thanks Roy. Leo, why don't we go back to the phone line? I believe Alex Hacking is on the line from Citi.

Operator Certainly, your line is open, Mr. Hacking.

Alex Hacking Yeah. Morning. Thanks Roy, Bill, Jim, and Tim. Congrats on the five-year anniversary. Also, congrats on all the R&D you're doing. It's great to see Alcoa leading the way here. In terms of questions, firstly, could you maybe just give a little color on ELYSIS that sort of puts and takes of retrofitting versus building it in greenfield, because you talked earlier about, I guess greenfield being contingent on ELYSIS technology. And then secondly, just on the greenfield side, how does

the board sort of get comfortable with the idea of stronger for longer aluminum prices? Or are you still looking to build with $2,000-a-ton type economics still working? Thank you. And I know that questions for the future, not for today, but thank you.

Jim Dwyer Ben, perhaps you could talk about greenfield and brownfield for ELYSIS.

Ben Kahrs Sure. Sure. And Alex, I think the question was kind of give some color to the retrofit versus a greenfield or brownfield. And so, to separate the two, when you think of an ELYSIS retrofit for an existing smelter, it's essentially a cost reduction project and a project to make yourself impervious to future carbon pricing. So, the volume changes there, but the big value that the customer would get by retrofitting is to eliminate that entire carbon value chain, which I talked about a minute ago. And also, with the advent of carbon pricing, protecting yourself against that expense either now or in the future.

When you think of it from a brownfield scenario, it's very much all of those same benefits as you get in the retrofit case, but also, you are building capacity without having to invest in that carbon plant asset. So, the capital efficiencies that we talked about, that reduction of 10 percent in the future, makes the decision between Hall-Héroult and ELYSIS if you've decided that you want to invest and get additional aluminum units, that decision to convert to ELYSIS is a pretty clean one because the OPEX benefit's impervious to CO_2 and capital simplicity. And then I'll pass it to Bill or Roy to answer the second part.

William Oplinger I'll gladly take it, Ben. And the second part was specifically about how do we get the board comfortable with stronger for longer. And at this point, Alex, it's not really an issue because we are committed to making ELYSIS work, and we've got a series of stage gates that ELYSIS has to meet. And so, at this point, we don't have greenfield on the drawing board until we are certain that ELYSIS works. And so, there's still stage gates that have to be passed there, which allows the company to see that stronger for longer plays out. And so, we have some time before we have to make a large greenfield decision. Roy.

Roy Harvey Yeah, I'll just add in a bit of a window into the board environment. We have got a great selection of directors. Many of them have specific commodity experience. They've seen the ups and downs inside of their own commodities. And they've also seen how much new competitors, and take China as an example, inside of the aluminum industry, how much new competitors can quickly change the game.

And so, I would argue that we have a board that is very well understanding of how much those cycles can impact when you choose to invest and how you have that forward view. And so, as Bill said, the fact that we're talking about stronger for longer, great in the moment because stronger means that we can generate more cash, which means we've been able to accelerate our balance sheet

improvement, which means that we can invest in these R&D projects with a much firmer foundation, as well as maintain our operations, sustain their production, and creep them going forward.

As we look to the future, again, we're trying to check all the boxes, good, choose all of the above. We're very positive on market fundamentals, those structural shifts. We see everything pointing towards this improved environment, but because we understand how the commodity world works, we choose also to be very strong, very competitive at the very bottom of that cost curve. And you see us doing that, the Bauxite side on the Alumina side, both in that first quartile driving our smelting portfolio down to the first quartile as well through the portfolio review that we're in the midst of right now.

We need to be competitive and any investment we make in the future, and as Bill said very, very well, it needs to solve for everything. And it needs to be a financially attractive greenfield or brownfield or retrofit. It needs to be financially attractive. And that's across all those projects that we talked about today. The addition of a carbon price can be a great boost, can be a great boon because at the same time we're solving for low carbon, but we choose to not just make great investments, assuming prices will always be great, assuming stronger for longer, but rather we're going to make great investments that will work through the commodity cycle. And we can take great advantage and make great cash flows through these moments of being stronger and like we said, structurally, we think that's going to last longer, but we're also going to make sure that we have a competitive and successful portfolio at the bottom of the cycle as well.

Alex Hacking Thank you.

Jim Dwyer Thanks, Roy. John, I have a question from chat about mine reclamation. What's Alcoa's approach to mine reclamation? And how does it compare to competitors?

John Slaven Sure, Jim. So, our approach, if I think about it from the point of view of the rate at which we rehabilitate, our target is to ensure that we are consistently reducing our footprint over time. So obviously as we need to access new areas, we clear, but we need to ensure that we are returning the topsoil and fully rehabilitating that land before we exit. So, our target is to have a rehabilitation rate greater than our clearing rate. And we've been successful in achieving that over time. More consistently now with our operating mines, we are getting to a point where we are significantly exceeding the amount that we are clearing through our rehabilitation efforts.

We're also very focused on the quality of rehabilitation. So, we've got a target of achieving 100 percent of the biodiversity that existed previously to return that. We have pretty high levels. There are areas that if we aren't able to achieve that biodiversity first time around, we will go back and do supplementary planting to

make sure that we are fully recovered. Our view is that we are really fortunate to have the trust of our communities and the governments in which we operate. We operate in some pretty sensitive areas.

And so, it's really important that we've got the absolute highest level of rehabilitation in the areas that we rehabilitate. So, we are doing well. There's always more to do there. And we continue to learn. We continue to understand where we are successful if there [are] certain species aren't recovering in the way in which we hope, we go back and we learn from that and we encourage our communities to participate. So, we use seedlings grown by local communities as well, which also is a great employment opportunity in the areas where we are operating.

Jim Dwyer Thanks, John.

John Slaven Yep.

Jim Dwyer We have another question from the phone line from John Tumazos.

John Tumazos Thank you very much. And thank you for the presentation today. If I could ask two, would bypassing the carbon anode save something like two to four cents? I'm not focused well on how much the carbon anode costs. I guess, electricity and alumina are the bigger items in smelting. Secondly, does the new technology use about the same amount of electricity as the current world average near six point five kilowatt-hours per pound? Or how much is the power advantage?

Jim Dwyer Ben, do you mind to take those? Yep.

Ben Kahrs Sure. Sure. So, John, in rough terms, the 15 percent OPEX reduction I think equates to around 275 a ton as the total OPEX reduction by converting. So that includes all pluses and minuses of taking out the anode and what happens to labor, et cetera. And then the second question was around energy intensity. We are targeting our energy intensity to be comparable to what the Hall-Héroult equivalent is at a given amperage. So, as you know, as you go up in amperage, typically you get more energy efficient. And if you look at the Hall-Héroult benchmark, say at a AP30 technology, we would be targeting that we would have a comparable energy intensity to that size cell.

John Tumazos So the 275 a ton that you're going to save, or about 13 cents a pound is not going to come from electricity or alumina. It's going to come from carbon, labor, maintenance, things that.

Ben Kahrs Exactly. So, you eliminate the raw materials, you eliminate the fuel used to bake the anodes, you eliminate all the equipment and plant PPE that you need to make and maintain those assets. And then there's a labor change as well by making the plant more efficient from a labor basis and not have to change the

anodes every 25 days. Now, you change them every two years. So, when you include all, though, that's where the cost savings come from. But it does not affect alumina, it does not affect power.

John Tumazos Thank you very much for the explanation. It's a big help.

Ben Kahrs Sure. Thank you.

Jim Dwyer Tim, I think this one is probably for you. It talks about the upside to aluminum because of electrification and carbon restrictions. And the question is, how challenging is the China construction slow down for industry fundamentals?

Tim Reyes Yeah, thanks. I think the overall growth this year in the markets has been very strong. We certainly recognize that there are slowdowns occurring as we move toward the back end of the year, and obviously that's for various reasons. We've seen intermittent COVID disruptions. The supply chain itself has impacted growth in certain areas by restricting supply, and we've certainly seen that in China the high-power costs are having an impact in the near term. I think we're continuing to look at the longer-term trends for the industry and seeing positive outlook there overall. Certainly, the area where we see the most positive outlook and changes taking place is in the transportation industry where the growth of electric vehicles and hybrids looks very positive going forward on a global basis, not just China, not just outside.

Today where you have total share at a relatively low level as we move toward the end of the decade. We've seen projections that have growth in hybrids and battery electric vehicles comprising up to 43 percent of global share. It's important for aluminum because hybrids in battery electric vehicles, contain more aluminum per vehicle than traditional gas powered or ICE vehicles, internal combustion engine vehicles, on average upwards of 100 kilos or a few hundred pounds more per car. So overall, I think transportation will be a strong driver in the long term of demand as will electrification. The build out of not just the installations for solar and wind, but also the infrastructure required to build solar and wind contain more aluminum than traditional energy solutions. I think we see continued positive demand aspects driven by electrification and decarbonization, and aluminum is really very much central to supporting that growth going forward.

Jim Dwyer Tim, just a quick related question from the chat. It has to do with secondary. It basically asks if you [are] seeing risk to the secondary market or to the primary market because of secondary increasing. For example, as people in rolling use more recycled material, so the play between primary and secondary there.

Tim Reyes Yeah. We start with the fact that one of the most positive attributes for the most positive attribute of aluminum is that it's infinitely recyclable. Primary producers

and secondaries alike promote the fact that aluminum is recyclable. That puts aluminum in a great position to gain share overall. As we look forward, we see growth in both primary and secondary or recycling or scrap consumption, and in fact, we would say, secondary is going to grow at a faster pace going forward than primary growth. A lot of it's driven by a natural transition in China, whereas you go from an infrastructure driven economy to a consumer product driven economy. We'll see the Chinese consume more scrap going forward. Today, just to give you a comparison, Chinese consumption of scrap is probably somewhere in the tune of just north of 20 percent of total aluminum demand, whereas outside of China, that number is probably just north of 35 percent.

We would expect to see that going forward. Certainly, as China caps their primary production domestically going forward, there are a couple of different ways for China to fill the gap because demand will continue to grow. Part of that's through increased recycling. Part of that will be through continued imports of primary aluminum. Also, we could see a decrease in the volume of exports in the form of semi-finished products coming from China. Again, the beauty is it starts with the fact that aluminum's going to grow, and scrap will form an important part of it.

Jim Dwyer Ben, I think we had a related question as to why we were working on ASTRAEA.

Ben Kahrs Yeah. When you think about the scrap business, it's really broken up into two macro streams. One is the pre-consumer stream and last is the post-consumer stream. If you think of the pre-consumer stream, there's a finite number of metal units that are circling back for different rolling mill, stamping plant, et cetera, that creates scrap and it goes back into the value chain. Those are much more predictable in terms of the alloys, and you can segregate them and you can send them back to an appropriate user that can consume that product. On the post-consumer side, one of the most successful recycling streams has been UBCs. UBCs, used beverage cans, go back into making more beverage cans. That's been very successful. But there's a growing piece of the pie in that post-consumer market that we project in the future will be important.

One of the things Tim mentioned with electric vehicles coming on in the reduction of internal combustion engines. Internal combustion engines have been the consumer of all of the really convoluted combinations of alloys in the market. When you have a post-consumer stream and you don't know what you can do with it, very often, you can put it into an engine block because the chemistry bands on that very, very wide.

When that consumption starts to go down because of the pickup in electric vehicles, that creates a long position for these types of scraps that are really difficult to consume on a high volume. Most people can't put them in anything more than small amounts. When you think about ASTRAEA, when you think

about the ability to take any combination of alloys, so you can take a car with the hoods and panels, with extrusion tubes, with the wheels that are different, you take any combination, and if you can beneficiate that up to P0101 which exceeds any purity of any smelter, that's a huge advantage. That's why we're excited about ASTRAEA because it attacks that post-consumer market and a market that we expect to grow in the future.

Jim Dwyer Super, thanks, Ben. Just a related question, I think you've spoken to this already, but might as well answer it too directly. It's about licensing and whether you would do it as a partnership or arm's length. I'm not sure you have too much you can say on that front, but just since we have the question then-

Ben Kahrs It's back to ELYSIS, Jim?

Jim Dwyer Yeah. All technologies actually Ben, so if you have different approaches…

Ben Kahrs I'll let ELYSIS speak ELYSIS for whenever it gets to that point. They haven't announced any licensing model, and we are an owner, but we're going to let them answer that at that point. Beyond that, in terms of Alcoa specific or Alcoa only technologies we'll obviously consider whether implementation ourselves makes sense or whether sales or licensing to others makes sense. We're open to both, but it's a little bit preliminary at this point, given we're in the R and D stage.

Jim Dwyer Fair enough. Tim, just a quick question about, do you see any potential for supply increase surprises?

Tim Reyes Supply increase surprises. I'm not sure how to address a surprise specifically. We live in a volatile world, and I think that's one of the reasons why it makes sense for us to be very conscious of being competitive through all parts of the cycle, as Roy mentioned before, because over the years, we've seen both supply and demand changes that happen very rapidly, so I don't know of any specific surprises. Maybe I would say that what we've seen lately with respect to the really clamp down on power cuts in China, as an example, has probably created curtailments more quickly, then some have initially led to believe. So that could be an example of something that's moved a bit quicker, but that's affecting various parts of the supply chain, not just supply of aluminum, but the supply raw materials impact demand, etc. But again, I think as far as specific supply surprises where we would see significant path capacity coming online without any forewarning, I would say I don't see that, I don't see anything specific.

Jim Dwyer Thanks, Tim. I suppose it's always hard to know surprise before it surprises you. Bill, I think this question might be up your alley. There's a question about total Capex spend needed to hit decarbonization targets in 2030. I believe we have a 50 percent reduction by 2030.

William Oplinger The targets that we have for 2030 are included in the capital spending that we've laid out. We believe that we can get there with the near-term capital spending that we have. As I said earlier, we've given you an outlook for through 2024. On this call, I gave a little bit of a view of '25 and '26, but we believe that we can get to our 2030 targets with that spending that we've outlined.

Jim Dwyer Thanks Bill. Another one on taxes, actually. If there's a corporate minimum tax, how would that impact Alcoa?

William Oplinger There is a number of different attributes of the new tax law that we are looking at, none of which that will have significant impacts on Alcoa at this point, as you know, we have large net operating losses in the US. If there is GILTI reform, as proposed earlier this month, we may start to consume some of those tax attributes as we go forward. But as you know, we have something like three billion dollars of global net operating losses, so should not have a near term impact. As far as the global minimum tax is concerned, we also should have enough foreign tax credits if that goes into effect should not have a material impact on the company.

Jim Dwyer Great. I think we actually have another question from Dave Gagliano on the phone line. Leo.

David Gagliano Great. Thanks for taking my follow up. I just have a couple of questions. I didn't catch the capital cost of ELYSIS compared to traditional smelting in terms of maybe on per ton of capacity basis. Just what's the difference initially?

Ben Kahrs Yeah, Dave. We haven't announced the capital cost because we haven't done the studies to have a detailed estimate. What I can say about it is our long-term target remains that when you compare to a Western world deployment, that includes a carbon plant, a smelter and a cast house, because some people or some companies are, are able to deploy by eliminating the carbon plant, but then they buy anodes. When we compare to full smelter with all three traditional attributes, our long-term target is reduced that Western world standard by about 10 percent. However, in the near term, the supply chains for all the proprietary materials that are used to build the pots, as well as all of the new equipment, because all of this is new and there is no current supply chain to fund these materials. We do expect the first few initial deployments to be higher in Capex because they need to build all those solutions.

David Gagliano Okay, thanks. And just switching gears on the updated capital allocation framework, when I compare it to the previous framework, there's a couple things missing. The previous framework had a minimum cash balance, target of a billion and a specific adjusted net debt range of two [billion] to two point five billion. It afforded us an opportunity to frame potential capital returns. Absent those

metrics, can you give us a little more detail regarding how capital returns fit into the mix with this new capital allocation framework?

William Oplinger Yes, Dave. Let me address the first point. There was redundancy in the old capital allocation framework between targeting a billion-dollar cash on the balance sheet and targeting a proportional net debt. There was interplay between the two, if you held less cash, it would affect your proportional net debt, et cetera. That's why we decided to eliminate it. Again, if we go back to the key points, we want to maintain a strong balance sheet. The balance sheet today is very strong. Given current market fundamentals, it may get a little stronger. Historically it's been weaker, so we will continue to maintain a strong balance sheet. From there, as we've said before, there's three priorities. At any given time, we'll be balancing between those three priorities. We've announced a fairly sizable capital distribution to shareholders in the future that the first being the dividend.

Dividend was a huge deal for us, and I don't know, Dave, whether you and I have personally talked about this. But the dividend is a signal that we think we can return cash to shareholders through the cycle. We wouldn't announce a dividend if we didn't believe we could sustain that dividend. It's a really big signal for Alcoa. Secondly, we've increased our share repurchase authorization. We had $200 million, we executed on [$]50 [million], we've launched an additional $500 million. I bring those up to make the point that given the strength of the company, capital returns are very important to us and returns to shareholders are very important. It doesn't say that it's more important than the other two potential uses of cash flows. The first being repositioning, you've seen that we've done a lot of repositioning over the last five years. If you look at my presentation that we provided yesterday, we've paid for all that repositioning through asset sales.

We've been able to basically make the repositioning cash neutral because we've generated significant cash on asset sales. Then the third point is effectively the positioning for growth into the future. You've heard today, and through the course of the presentations. We have a roadmap for growth into the future. We have a technology roadmap that will lead us to a carbon zero ambition in 2050. We will have the balance sheet to be able to do that. It's a balancing between those three items, and it's an acknowledgement that we want to maintain the balance sheet strength that we have today.

David Gagliano All right. That's excellent. Thank you for that additional color. I very much appreciate the perspective in terms of the improvements and the capital returns that've already happened. And just on a forward-looking basis… Now we know what Capex is for the next few years, we all have our price tags, etc., that we want to run through our models. Is it still reasonable to compare net debt, say the low end of the range of what was a range of target two billion? Is it reasonable to assume that the cash generation over involve Capex, everything else is returned

to shareholders? That's once we get net that target or whatever below two billion, is that still a good proxy for estimating cash returns to shareholders?

William Oplinger Dave, I think it's really reasonable to assume that we'll balance those three uses of cash flows, returns to shareholders, repositioning the company and repositioning the portfolio and positioning the company for growth. That's I think what you should consider and that's how we'll manage the company.

David Gagliano Okay. That's helpful. Thanks.

Jim Dwyer I appreciate all the questions from everyone. I know that we have more questions on the chat we haven't been able to get to, but we do have your information and we'll be responding to you individually after the event. I want to turn over to Roy for closing comments.

Roy Harvey Thanks so much for joining us today for our first investor day as Alcoa Corporation. As we mentioned, we're proud of the work that our employees across the globe have accomplished over these past five years to create a stronger foundation for Alcoa. We've strengthened our company, and we are now well positioned for the future. Especially as we embark on our vision to reinvent the aluminum industry for a sustainable future. I'm excited about the work that we'll do with our people, products and processes to help turn raw potential into real progress. Thank you for tuning in. Thank you to all the participants, and we'll talk to you soon.