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PRESENTATION

Operator

Good morning, and welcome to the Green Plains Inc. and Green Plains Partners Second Quarter Earnings Conference Call. Following the company's prepared remarks, instructions will be provided for Q&A. (Operator Instructions) I will now turn the call over to your host, Phil Boggs, Senior Vice President, Investor Relations. Mr. Boggs, please go ahead.

Phil Boggs - *Green Plains Partners LP - Senior VP of IR & Treasurer*

Thank you, and welcome to Green Plains Inc. and Green Plains Partners Second Quarter 2021 Earnings Call. Participants on today's call are Todd Becker, President and Chief Executive Officer; Patrick Simpkins, Chief Financial Officer; and Leslie van der Meulen, Executive Vice President, Product Marketing and Innovation. There's a slide presentation available, and you can find it on the Investor page under the Events & and Presentations link on both corporate websites.

During this call, we will be making forward-looking statements, which are predictions, projections or other statements about future events. These statements are based on current expectations and assumptions that are subject to risks and uncertainties. Actual results could materially differ because of factors discussed in today's press releases and the comments made during this conference call and in the Risk Factors section of our Form 10-K, Form 10-Q and other reports and filings with the Securities and Exchange Commission. We do not undertake any duty to update any forward-looking statements.

And now I'd like to turn the call over to Todd Becker.

Todd A. Becker - *Green Plains Inc. - President, CEO & Director*

Thanks, Phil. Good morning, and thanks for joining our call today.

We've been focusing for some time on developing our organization to deliver on our transformation. The changes to our Board of Directors announced last week was another sign in that development and demonstrates that we are fully focused on our mission to lead the transformation into biorefineries, creating sustainable ingredients that matter and follow our shareholders and owners that want our Board to represent a broad group of diverse members that have the experience and ambition to help our company achieve its goals for all of our stakeholders.

We want to thank Gordon, Jim and Tom for their tireless commitment to our journey, and they know -- and they leave knowing their efforts have contributed to our success. We also want to welcome Martin Salinas to the Board. He will also assume the role of Audit Committee Chairman. Martin has been a member of the GPP Board and is deeply familiar with Green Plains Inc., allowing him to step in and contribute right away.

We have also been enhancing our executive leadership team and have a broad 10-year team built for the execution of our plan and our future growth. Leslie van der Meulen was recently promoted to Executive Vice President, Product Marketing and Innovation, as part of our plan to build a high-quality organization to support our ingredient marketing and innovation platform with a deep bench of nutritionists, scientists, sales and marketing and quality control.

We did announce this morning that Walter Cronin is transitioning out of Green Plains to pursue personal investment opportunities in other -- and other interest in agriculture. Walter leaves knowing that the team he helped create and mold alongside me is ready to take on the opportunity to market, innovate and produce products around a game-changing technology and IP portfolio. He will remain a real consultant for the company while pursuing his other passions as he remains a true believer in our story.

We expect the transition to be seamless as Leslie and Walter have been working side-by-side for many years. Leslie continues to build out his team, including a new Senior Vice President of Global Ingredient Sales, who has led the sales and marketing organization of a largest producer and distributor of fish meal in Peru. He is joining our organization to expand on our success with ultra high-protein and help drive higher inclusion rates in global aquaculture diets and all other animal verticals. We are very excited about the evolution of this team as we put the pieces together that represent the future of Green Plains.

We have the ability in the organization to deliver on our cultural transformation to ensure we can continue to attract and retain talent or human capital as we execute on the deployment of financial capital to support our transformation. We are hiring and have tremendous career opportunities in what we believe is the most exciting ag tech and innovation platform in all of agriculture globally. Green Plains is on a path toward creating sustainable ingredients that matter, and we are building an organization of talent around this mission.

While we have accomplished many key milestones on our total transformation plan, we know much remains. With Fluid Quip fully integrated into our platform, we have now ordered the essential log and lead time equipment for all of our upcoming MSC protein projects, which, when combined with Fagen, Inc., brings greater certainty to completing each project in a 9- to 12-month time frame from groundbreaking.

We also executed on our first shipment of dextrose out of our innovation center at York, keeping us on track to deploy clean sugar technology on a larger scale in the coming years. I will touch more on that later in the call.

Turning to the quarter. We delivered strong financial results in the second quarter and first half of 2021 and continue to execute on our transformation plan while achieving several key milestones on our path to 2024 and 2025.

Our consolidated margin was $0.37 a gallon, aided by a strong spot market, risk management and optimization gains and the mark-to-market gains on some forward physical positions as well. Our margins were also aided by record production yields in both ethanol and corn oil as our Project 24 initiatives and continued improvement in our MSC facility at Shenandoah are already contributing to our results. We remain focused on executing on all areas of our business as we continue our transformation to Green Plains 2.0.

During the quarter, we produced 191 million gallons of ethanol, which equates to about an 80% utilization rate. Production has been trending higher as we bring sites online from our Project 24 initiative and should continue higher after our Madison, Illinois location starts up. However, we are cautiously watching the current margin structure in the third quarter, which could impact utilization in the nearby months. But longer term, we anticipate operating capacity once Project 24 is fully completed by year-end.

As we have a line of sight of 100% operating capacity resulting in sub-$0.24 per gallon operating cost, we believe when looked at like-for-like, puts our asset base finally back in line with the best operating plants in the industry.

While the second quarter margins were strong, industry production ramped up fast, as we outlined on our last call, resulting in ethanol stocks for the industry at a much higher level than last year at this time. While the spot market is starting to improve, it still has a lot of work to do to become positive due to continued crop and supply uncertainty. On paper, though, fourth quarter margins are positive, and we will continue to pursue our process of margin maximization, subject to industry conditions in that quarter. We will continue focusing on controlling things that are under our control, operating safely, innovating around science and technology while creating sustainable ingredients that matter.

Green Plains Partners recently announced a $60 million 5-year amended credit facility led by BlackRock, allowing us to return to our prior strategy of distributing cash to our unitholders, which includes Green Plains Inc., the parent. We have great financial partners that helped refinance this line, and this showed our commitment to maintaining a financially strong MLP, and the partnership continues to be protected by long-term minimum volume commitments, driving connected stable -- continued stable cash flows.

Now I'll turn the call over to Patrick to review both Green Plains Inc. and Green Plains Partners' financial performance. Then I'll come back on the call to talk more specifically about our ongoing initiatives and how each vertical fits into our transformation plan.

George P. Simpkins - *Green Plains Inc. - CFO*

Thank you, Todd, and good morning, everyone.

Net income attributable to Green Plains shareholders was $9.7 million or $0.20 per diluted share, a significant improvement over the $8.2 million loss equal to $0.24 per diluted share reported in the second quarter of 2020. Our net income was inclusive of a $9.5 million charge recorded in interest expense related to the private settlement of a portion of our 2024 convertible notes and a $3.8 million loss primarily related to the sale of our stand-alone grain elevators. Plant utilization was 79.9% compared to 53.5% in the prior year.

Adjusted EBITDA was $54.8 million in the second quarter, $36.9 million better than the $17.9 million we recorded in the prior year. EBITDA for ethanol production improved $53.7 million to $52.1 million for the same period.

For the quarter, our SG&A costs for all segments was $23.4 million compared to $20.5 million reported in Q2 of 2020, driven mainly by the inclusion of Fluid Quip SG&A this year and higher insurance expenses. Interest expense was $9.1 million compared to $9.7 million in the prior year. However, adjusting for the onetime charge of $9.5 million related to the convertible note transaction described earlier, interest expense was slightly improved from the prior year.

I want to touch on taxes as well. On a normalized basis, we would be a 24% to 25% taxpayer. However, we recorded a $4.8 million tax benefit in the second quarter of 2021 on higher pretax income due to a partial reversal of our deferred tax asset related to previously recorded NOLs.

Turning to Slide 9 of the deck. We provide a summary of our balance sheet highlights. We had $678.4 million of cash and working capital, net of working capital financing and at the end of the second quarter compared to $243.4 million for the prior year quarter. Our liquidity position at the end of the quarter consisted of $615.4 million in cash, cash equivalents and restricted cash along with approximately $294.2 million available primarily under our working capital revolvers and delayed draw term loan.

We were pleased with the recent completion of a 5-year $60 million amended term loan facility for the partnership, which removes a nearby maturity and enables the partnership to return to its prior strategy of paying higher distribution. We invested $28.3 million into capital expenditures during the quarter, primarily related to our ongoing high-protein initiatives. This included $5.4 million of maintenance CapEx.

We are now anticipating total CapEx could be higher than $225 million guidance for 2021 based on construction schedules. Maintenance capital for the year is expected to be about $25 million but may increase slightly as we continue to focus on supporting our Project 24 initiative by eliminating unplanned downtime and improving predictive maintenance.

The partnership reported an adjusted EBITDA of $12.7 million for the quarter compared to $13.2 million reported in the prior year, mainly due to the reduction in minimum volume commitments associated with the sale of both the Hereford and Ord plants, offset slightly by a 6% increase in throughput rates charged by GPP.

For the partnership, distributable cash flow was $11.2 million for the quarter compared to $11.3 million for the same quarter of 2020. Going forward, the Board has announced its intention to return its prior -- to its prior strategy of maintaining a 1.1x coverage ratio on normalized trailing 12-month distributable cash flow. The new financing facility does not have a mandatory principal repayment requirement, and therefore, the partnership should have ample liquidity to support higher distributions, providing an improved return to unitholders going forward.

Over the last 12 months, adjusted EBITDA was $54.1 million, distributable cash flow was $45.5 million and declared distributions were $11.4 million resulted in 4.01x coverage ratio, excluding any adjustment for the required principal payments amortized in the past year.

Now I'd like to return the call back over to Todd.

Todd A. Becker - *Green Plains Inc. - President, CEO & Director*

Thanks, Patrick.

So Green Plains is focused on 3 things right now: execution, execution and execution. Our recent accomplishments demonstrate our commitment to execution as we recently announced our protein build-out schedule, bringing Fagen, Inc. on as our general contractor, as a trusted partner to construct and complete these builds with high-quality and high surety for a job well done. They will build the remainder of our protein platform and have broken ground on our Central City location.

Mount Vernon and Obion are both on track to break ground in the coming weeks as well. For those that aren't familiar, Fagen was instrumental in building much of the industry and even built several of our locations. Their name is synonymous with quality and execution, and we could not have found a better partner to help execute on multiple projects simultaneously. They have agreed to work exclusively on our protein projects for the years to come, a testament to the quality of our technology and IP portfolio.

We are facing an opportunity unlike any I've witnessed over the past 14 years at Green Plains. The initiatives in front of us that can be accomplished through our ownership of Fluid Quip are exciting to put it mildly. Our go-forward strategy continues to be focused on 5 verticals: ultra-high protein, renewable corn oil, specialty alcohols, clean sugar and carbon.

In protein, we continue to execute on our capital deployment and are nearing the finish line at our Wood River, Nebraska facility. As Central City, Obion and Mount Vernon come online next year, we will have completed over 50% of our production capacity and reach an inflection point in our transformation.

As I have mentioned earlier, Green Plains has been developing a full sales and development organization to support our transition from commodities to ingredients. This includes nutritionists, scientists, quality control specialists and sales and development professionals. As I said earlier, our team is going to look very different by the end of next year, and I can't be more excited about the talent we are attracting to Green Plains.

At this moment, we are in negotiation with several companies for multiple year offtakes, some of which we anticipate will help us move up the J-curve as we produce higher protein concentrations. We remain focused on delivering our 2024 guidance based on the initial investment thesis of $0.12 to $0.15 a gallon uplift.

Green Plains has focused some of our preliminary scientific efforts around inclusion rates in aquaculture. We don't want to get ahead of the early and encouraging results we continue to see in our own world-class aquaculture laboratory as well as with our partner customers, but our conviction grows in stretching our efforts to the top of the J-curve and allow our excellence to cascade into other protein verticals. Project execution is what will define this product vertical over the next few years, along with a vision for our continued innovation around our IP portfolio.

Vegetable oils continued to be in strong demand due to rapid growth in renewable diesel, and our low carbon intensity renewable corn oil as a waste oil is highly sought out as a valuable feedstock. Maximizing corn oil yields through the deployment of MSC technology and other practices we are developing is already paying dividends, and we expect those yields to continue to increase in future quarters.

Let me be clear, feedstocks are absolutely king. The inbound interest is profound, but we plan to take a measured approach to using our DCO platform to maximize the present and long-term value of the strategically advantaged feedstock to address renewable diesel markets. We are focused on partnerships that can extend beyond offtake agreements and can allow us to learn, grow and expand the value that we can create together.

We are defining success in our distillers' corn oil development efforts as creating value beyond just the value of oil, as we expect to participate in the margin structure that is available from [RD] and the discussions and negotiations we are having allow for this participation. We believe that the days are coming to an end when someone just buys our oil to earn outsized returns because of our low CI scores and waste oil classification. We still believe the line in the sand will be drawn between waste and food oils, favoring our company and industry in the long term.

Our York facility is producing high-quality alcohol that meets the USP monograph, and we are -- but we are taking a cautious approach to this market and the upcoming season -- contracting season, which should provide some color on long-term values in the space. While a nice-to-have component and it was fantastic in 2020, the significant upside in our business is firmly in the verticals of protein, oil, sugar and carbon.

We were pleased to deliver our first clean sugar dextrose product in the second quarter from the innovation center at York. We have begun to identify opportunities to enhance the equipment there. And along with Fluid Quip, we are beginning engineering reviews for a full-scale clean sugar technology design. This remains early days, but I'm encouraged by the disruptive potential in creating a synthetic biology ecosystem around our innovative clean sugar project -- product.

Additionally, we are exploring our own ambitions around disruptive yeast and enzyme opportunities to further maximize the value of our biorefinery platform as clean sugar is the fuel for that as well. We hope to be able to share more early next year on how science and technology will advance Green Plains further into the future.

Clean sugar is core to our strategy, and we have begun several early discussions on co-location opportunities at the source for industrial biotech and synthetic biology companies and others to get the over-the-fence supply of dextrose, much like you see today, the most successful wet milling complexes in the United States.

There's still an enormous amount of work to do, and we are hiring a talented team to help execute on this opportunity as well. We also believe the potential to use the fermentation capacity we have for both scale-up at York and full-scale elsewhere uniquely positions Green Plains to look at our own capabilities to produce unique products.

As we have discussed before, our ultra-high protein product has 25% yeast, and we have only just begun to look at what we can express from that and what products and characteristics we can create using synthetic biology and science to create novel ingredients for applications around the world today based on our platform that are needed and in demand.

And then last but certainly not least is carbon. We are focused on our own due diligence for our potential investment in the Summit Carbon Solutions' Midwest Carbon Express pipeline. We have assembled a world-class due diligence team, including experts in engineering, right of way, pipeline construction and carbon policy to make us -- to aid us in making our decisions.

We believe Green Plains will be a thought leader in carbon, and we are attracting a team of advisers to complement our ambitions. Investing shareholder capital into the Summit Carbon Solutions project is a significant opportunity for our company, and we are reviewing this prospect carefully.

Additionally, with our 3 Southeastern plans, we are reviewing opportunities for stand-alone carbon capture systems. The opportunity is to reduce our CI scores, and each of the facilities opens the door to a number of exciting possibilities as we produce low-carbon ingredients across our platform. Green Plains had a very unique opportunity to invest in the development company behind the Summit pipeline, and I sit on the Board of that company. This position offers us an opportunity to be one of the largest owners of the pipeline and create value beyond the reduced carbon values that we'll produce in the future.

As I said, we are considering 3 of our locations for direct carbon injection opportunities, and we are exploring the potential returns on those projects. We have embarked on an outside engineering study to determine the locational feasibility for Madison, Mount Vernon and Obion for direct injections into geological formations on that site -- on those sites. If a positive outcome from this study occurs, we will move quickly to perform a detailed geological assessment. Please know, we are taking a very detailed and diligent approach to all of these opportunities to maximize shareholder value.

Legislation to expand carbon capture and sequestration continues to garner broad bipartisan support, and we are optimistic that this will help ensure the success of our partnership with Summit Carbon Solutions and the direct injection opportunities we are exploring. Even the Infrastructure Bill shows the enthusiasm from both sides of the aisle to help make projects like the SCS pipeline a reality.

Carbon capture is a critical piece of our sustainability goals, which we are expanding as we have begun to show the market that we are a true ESG story. We plan to unveil an inaugural sustainability report by the end of the year, but have recently posted data sheets on environmental, social and government to our, website and the result was a significantly improved ISS score. We all know ESG is more than just numbers, and we believe we are truly a sustainable company that's just starting to build and tell our sustainability story. But the numbers matter, and our recent improvement is encouraging. This is just the beginning, and we will continue to help clarify all of the exciting initiatives we have on the ESG front.

Our key pillars are aligned with macro trends to lower our carbon in everything we do. While it may take some time to achieve the aggressive goals we have laid out, we are focused on executing on the key milestones in front of us to get there. We believe we have assembled an innovative ag tech team and combine them with our strategic partnerships to use science and technology to truly develop sustainable ingredients that matter for our growing world.

Our path to 2025 is clear, but we know there will be obstacles along the way. Our job is to break them down and deliver on what we believe is the best opportunity in agricultural technology and transformation in the markets today.

Thank you to our stakeholders for your support in our transformation. And thanks for joining on our call today, and we'll start the question-and-answer session.

QUESTIONS AND ANSWERS

Operator

(Operator Instructions) Our first question comes from the line from Craig Irwin from ROTH Capital Partners.

Craig Edward Irwin - *ROTH Capital Partners, LLC, Research Division - MD & Senior Research Analyst*

Congratulations on a solid result, where there was a lot of progress on a lot of different fronts this quarter. Todd, I wanted to ask about clean sugar. This is one of the big firsts you outlined in your prepared remarks. Your first shipments there, can you maybe give us a little color on what you're learning with these shipments either in the process or from the customers and feedback in the market? And can you clarify for us, do you need to have the first 55 million gallon plant fully commissioned to decide if you're going to go to the 150, as you laid out sort of in an upside scenario there?

Todd A. Becker - *Green Plains Inc. - President, CEO & Director*

Yes. So we're learning a lot, and we're still in the batch process trying to move to the continuous process to make sure it's a continuous process when we scale it up to much larger sizes. And so what we have learned is we can go all the way to a food-grade sugar as well, and we're waiting to put that equipment in because I think that's an important market that we want to address, but the industrial markets are extremely important as well.

The first shipments went to industrial synthetic biology and biotech players so that we can -- and we have sent them shipments in the past as well, but we can get an assessment from them on how our product will fit into their future as well. And we've seen interest from industrial biotech, biochemical, green biochemicals, bioplastic types as well as food and confectionery businesses as well. So we think this is such a disruptive technology. We want to make sure that we do it right, the quality is there and that it is a scalable technology.

The interesting thing about what we can do with this is we can actually build a -- or transform one of our sites to a full clean sugar facility. What's great about this technology as well is it also can be used as a slipstream where we can also slipstream some of our sugars as well into a different system and just produce partial at a plant as well.

And so we're looking at all of those opportunities. Our goal and what we really want to focus on is really changing over a traditional ethanol plant into a modern biorefinery where you won't make ethanol there anymore, and you'll just make dextrose. And that's where we believe we'll have the capacity down the road upon success of this review and this technical aspect of what we're accomplishing, we think we could have some success in a full transformation into a full biorefinery where you're not really making ethanol anymore.

So it's a bit of a -- we're very excited about it. We're excited to the fact that we now know that we can make the product. We're excited to the fact that we have customers that want more and more samples of our products and some are even commercial scale customers, not start-ups in synthetic biology. And so we're learning a lot. We think we're on a good path, and we think that there's 3 ways to look at it. You can just slipstream it, you can retrofit a current 50 million gallon plant or 60 million gallon plant on your path to 100 million or 150 million gallons or you could do a little bit of all of that.

So what's unique about some of our plants like in Wood River, for example, is that's basically 255 million gallon plant side by side. So you could actually transition one side while keeping the other side as a traditional plant or transition both sides ultimately down the road. So very exciting. We're very excited about the progress. A lot of work to do still. We're starting our FEL 1, FEL 2 engineering work as well, and the Fluid Quip team has a dedicated team for clean sugar.

Craig Edward Irwin - *ROTH Capital Partners, LLC, Research Division - MD & Senior Research Analyst*

My second question is about HR. So you said you're hiring. That's pretty good news, right? Investors are applauding the fact that you named a Chief People Officer. Can you talk a little bit about the hiring needs over the next few quarters? What do you think is a focus for the company? Is it necessary for execution capacity? And I guess second part of the question is, we all really like Walter. We're sad to see him go. You said real consultant, I think you're underlying real in the way you said it. Do you have any color you can share on his plans and availability to work with you?

Todd A. Becker - *Green Plains Inc. - President, CEO & Director*

Yes, we're hiring. As we expand our business and we think about the different needs of the company, we're hiring and we're thinking differently than we have in the past. In the past, we are really about evacuation of low-value, low-margin commodities in a high production environment. So it's much more of a commodity mindset. As you transition into protein, oils, sugar and carbon, you have to change your mindset around high-value products with higher-margin structures that you need to have the developed relationships at each of those verticals.

So in ultra-high protein, it's nutritionists to nutritionists. It's scientists to scientists. It's innovation with your client together and what we can do with that 25% yeast within the product and we express amino acids for them that they need -- that are needed in their own supply chain. And we believe we can do all of those things as partners. And so -- and while traders and marketers are still a very critical part of what we do, salespeople and scientists and nutritionists are also going to be a very important part of what we do because when you look at where we sell our products to whether in aquaculture or pet or dairy or poultry or swine, where all of our products are going to go to, the salesperson or the trader makes the contact with the nutritionist, and the scientists make the decisions. And that's what we see in a lot of these companies. So that's first and foremost is innovators and technologists.

And things to look at, what can we do with the yeast component of this product. Because if you look at what we have, we have yeast, we have fermentation, we have science, we have innovation. And there's so many things to do with a built-in yeast component that other companies with a lot less are worth a lot more today. So we feel like we're just on the starting path of innovation and -- around this product. And it's not just going to be around protein concentrations.

And I think while we spend a lot of time saying if we hit 58 protein, this is what it's worth. But quite frankly, it's not a concentration issue. It's really going to be functional and what we can do for these species in each of these verticals.

So those are the type of people that we're looking for. So it's going to be salespeople, it's going to be technologists. In clean sugar, we're going to look for people that have been involved in dextrose and glucose and engineering and technology and sales and development. And we're going to look for people that understand the value of a lower CI product than they can get out of a wet mill and whether the products they can get out of that.

In carbon, we're going to hire carbon specialists to help us understand not only the fact that we're involved in the carbon project with Summit Carbon Solutions, which we think is very, very exciting for our shareholders. But the fact that we can direct, inject and start to think about monetizing our own carbon not just by putting it in the ground and getting the 45Q in the carbon credit, but by creating low carbon ingredients that we believe will be very impactful. And then obviously, the oil market as well.

So those are the type of people that we're hiring. We have hired them. I mean how exciting is it when we have one of the largest -- a new VP or SVP from the largest fish meal producer in Peru that's going to come to work for us and bring all of his worldwide contacts and distribution network to help us distribute our product to global aquaculture companies. That's extremely exciting as we believe the anti-soy movement will continue within aquaculture, and our product is very exciting.

So all of those things are what we're doing, and all of those things are needed. And if we're going to be trusted with our investor capital, which they have so elegantly done for us, we got to make sure we deliver on making sure we get the most amount of value out of all these products over the next several years.

On the Walter situation, Walter has, for many years, wanted to pursue ambitions in other areas of his interest. And so he came from soy processing, and he spent many years in soy processing in his past and trading. And Walter has always kept that interest in soy and in trading. And he wants to move on to manage some of his own personal investments as well as consult in the soy processing industry and some of the projects that are going to be coming online. And so we've discussed this at length.

And what was important is that he leaves us well set up with an organizational structure that we built both side by side. And Leslie has been with the company for quite a long time now, and they've been working side-by-side to help build this organization. And this was just the right time for him to go pursue some interest that he has. But he leaves the company in really good shape.

And when I say he's going to be a "real consultant," that's what he's going to be. He's so fully bought into our strategy, remains a shareholder and -- as well. And so he helped develop this strategy for us. But having him leave the company, obviously, for us, is -- we're excited for him. And I think it's a great opportunity for him, but also within our company. As you hear, we set up many channels of the things that are needed to be successful as well, and he'll still be around working with Leslie and making sure he consults with us on all things protein and oil. So he'll be missed, and we thank him for his great contribution, but the company is well set up now to move in the future as well.

Operator

Our next question comes from the line of Laurence Alexander from Jefferies.

Laurence Alexander - *Jefferies LLC, Research Division - VP & Equity Research Analyst*

I guess 2 questions to start. I guess, first, on the protein side, can you give a sense for the cadence of shipments and contribution to profitability in the back half of the year? And secondly, on the synthetic biology comments, can you flesh out a little bit how you're thinking about the yeast and fermentation platforms because I think it's been a pretty capital-intensive industry for other companies? And so it would be helpful to get a sense for how much you have know-how in-house versus that you need to build out the expertise in those areas?

Todd A. Becker - *Green Plains Inc. - President, CEO & Director*

Yes. So back half of the year, we're going to bring Wood River on. Obviously, it's just a start-up. We believe that we should be starting up Wood River sometime in September. And so we're excited about that. We're on track to do that. We're waiting for one last key part, and that's kind of the only thing that's holding us back right now because of, obviously, the supply chain constraints. But we know when it's going to be finished and we have a truck waiting there for it. So we think sometime mid-September, we're going to fire that plant up. We've already been in start-up mode already, but we got to get the dryer started, and that's really the last bit of it.

So once that comes online, we should have 2 to 3 months of production coming out of there while finishing up the year at Shenandoah. So contribution there, when we look at it, is all of Shenandoah for the full year and a little bit of contribution from Wood River towards the end of the year of '21. It really starts to get a full year of 2020 -- in 2022 at Wood River and Shenandoah. And right now, we're in negotiations to have -- know where that product will go, whether it's in aqua, pet or dairy and poultry and as well as other areas.

So we think we'll have a full year of those 2 plants, and then we'll start to cadence in other plants in 2022. Probably Central City comes on first, I think we'll break ground in Obion and in Mount Vernon next. And so by middle of the next year, we should have the equivalent of half of our platform running. And that's really when we'll start to see the real contribution to the platform in mid-2022.

In the synthetic biology area and yeast and development, and I'm going to let Leslie just comment on it real quick, we know -- we've known that this product has the capability to do very special things because it's not just around protein, it's around protein and yeast. And so we have been developing a plan to capitalize on that. And part of it is, don't forget, is our relationship with Novozymes as well. And we work with them to look at that yeast component and what they can bring from their biological library, and we've been working closely on that.

So the question being, can we get our yeast to express certain characteristics, whether around taste or whether it's around amino acids and other things like that? And quite frankly, we think, number one, we should in-house some of these things because of our innovation centers that we have. We'll also partner with others because of the relationships that we have. And we've seen some success in that already.

And I think our capital intensity, because of what we already possess in the sugars, the fermentation and the yeast, will be much cheaper and much faster than potentially others will have to get to market. I'll let Leslie just comment a little bit about what work we've done in -- on that and kind of what we're thinking about -- around specifically in some of our sales channels. Leslie?

Leslie van der Meulen - *Green Plains Inc. - Executive VP of Product Marketing & Innovation*

Thank you, Todd. Yes, we have been developing specific applications in yeast internally. We've done this ever since we took over the York Innovation Center back in 2017. So the question that we saw was how do we leverage our internal capacity with our partners, as Todd mentioned, on Novozymes. So that relationship has brought us some great advancements that we're now trying to lift to the higher level so we can get them into commercial trials. But overall, the balance that we've struck is really an internal and an external approach.

Operator

Our next question comes from the line of Jordan Levy from Truist Securities.

Jordan Alexander Levy - *Truist Securities, Inc., Research Division - Research Analyst*

Really nice quarter. The $0.37 per gallon margins you guys reported, certainly impressive. I want to try and see if we can get a sense of how much of that on a high level is attributable to the pricing in those mark-to-market contracts, Todd, I think you mentioned, versus the better yields on the product side and the OpEx improvements from Project 24 and application of MSC at Shenandoah?

Todd A. Becker - *Green Plains Inc. - President, CEO & Director*

Yes. I mean, when we look at -- the mark-to-market wasn't that big, but it was something that I just wanted to call out because it will probably reverse in the next couple of quarters. So -- but it's about a $5 million to $7 million gain we had to pull forward just from physical contracts. And the reason -- we typically don't have to do that, but we just wanted to make sure when we put those sales on and put those purchases on that in the third quarter, we will be able to run all of our plants based on farmer supply. And thus far, we're going to be able to run all of our plans at this point. We'll look at the market conditions and make decisions from that perspective, but I think supply of corn at most of our plants on the input side is available.

On top of that, we definitely had some gains on our optimization strategies around early crush as well as what we do around options and maximizing or limiting the risk of the downside. That was another $5 million to $10 million, and the rest was really just from the margin of the business. But we had record yields of producing ethanol. We had record yields of producing corn oil.

Now we're not going to give those out necessarily. But we believe that also contributed to our success even at lower run rates. So it's just step-by-step, and I think we're making great steps, but we're really focused on -- while that's a nice to have and it generated significant free cash flow for us to continue to help us on our journey of transformation, we've always said this, and I think it's really important to remember, we have to run our generation 1 platform so that our generation 2 and 2.0 runs really, really well. And so it's still important to make sure we optimize and we make sure that all of our generation 1 plants are operating at low cost, very well, very efficient and reducing our downtimes because they continue to have to run to make all of our new high-quality products.

Jordan Alexander Levy - *Truist Securities, Inc., Research Division - Research Analyst*

And then just my second question is specific to the protein side of things and more specifically on the aquafeed. Just wanted to maybe see if we could get an update on how things are trending over at Optimal and the agreement you guys have with Hayashikane and what you're looking for out of that side of the business to kind of get it to the next level as you roll out the additional protein facilities?

Todd A. Becker - *Green Plains Inc. - President, CEO & Director*

Yes. So how we look at it is optimal will be a critical component of how we think about rolling out some of our product into finished products, and they continue to do their work around the aquaculture laboratory. And we're just getting ready to open up another feed innovation center in

Omaha as well, which will make commercial feeds for use in aqua and other verticals as well, and that's getting close to completion as well because that's part of what we have to do, which is work with our customers and think a little bit differently than others. We're going to build -- help pull-through their solution, and we'll be there to help them do that.

The Optimal strategy continues to remain on track. We work with aquaculture customers around the world as well to help them design their diets and their feeds. And we're very excited about the opportunity. It's probably side-by-side. As we scale our protein, we'll scale up optimal. But we have a great team that we've built there that is truly getting us ready to add value beyond just selling it one truckload at a time, but to move more into finishing or giving a complete solution to our customers, which we think is unique to what's available in the market today.

Leslie has been really spearheading this for several years. Leslie, if you want to give a quick update on some of the progress we've made, that would be helpful.

Leslie van der Meulen - *Green Plains Inc. - Executive VP of Product Marketing & Innovation*

Yes. I think what we're focused on is driving inclusion rates into higher-value diets. We target salmon, yellow tail, and that's showing a lot of progress. And as a result, as Todd mentioned earlier, with our new SVP of Global Ingredient Sales, we're accelerating that effort, so to really get into countries where we see immediate opportunity to get into the diet at substantial levels.

Operator

Our next question comes from the line of Manav Gupta from Crédit Suisse.

Manav Gupta - *Crédit Suisse AG, Research Division - Research Analyst*

My first question is when I look at the RBD grade soybean oil, it's still trading at a significant premium to the corn oil you're producing. And if I understand correctly, the corn oil may be slightly more difficult to process, but its carbon intensity is like half of soybean oil. And so as these pretreatment units do come online, do you expect the gap between the soy and versus the RBD to compress materially as you go along?

Todd A. Becker - *Green Plains Inc. - President, CEO & Director*

Well, RBD is obviously trading at a premium because of the refining capacity in the United States is still somewhat limited. And so to get an RBD soybean oil, you obviously are paying a premium for that. We deliver a crude oil, which is trading at almost parity with soybean oil today just from a crude-to-crude standpoint.

So I think we've made a lot of progress in the last 3 months to get to almost an equal footing to crude oils. And again, if we had the capability to pretreat as well, we'd get a premium, but there's a cost to doing that. So I think we've made the progress we need.

I think what's more interesting is the interest that's coming in the door for our low CI renewable corn oil is off the charts for all of the projects that are starting up and being built in the United States, and they understand the importance and the potential headline risk of just doing a food oil versus a waste oil at lower CI scores. And so if you can get that into the mix or even go fully on some of these plants, and we're seeing interest in that as well, I think there's going to be at least parity, if not a premium, in the future for a low CI renewable corn oil. As more of this supply gets locked up, I believe renewable corn oil supply will get locked up and will become harder and harder to buy and will trade at a premium to crude soybean oil in the future.

And we're in several discussions across multiple parties, multiple plants, multiple companies on how we can monetize our oil and participate in the 2 50 to 3 50 margin structure that exists for renewable diesel. Otherwise, at the end of the day, this industry will just build it on its own. I don't think we want to go that route, because I think there's enough capacity. But I do believe that we are standing on what I think is one of the biggest opportunities in margin expansion for what we do around monetizing our oil and sharing in the renewable diesel margin, which we believe is in the future of our company.

Manav Gupta - *Crédit Suisse AG, Research Division - Research Analyst*

That's very positive for you. I have a quick follow-up here. Could you just remind us about the cost of conversions of the 50 million gallon facility, 100 million gallon facility in terms of cents per gallon, if you want to add the extra mobility unit or if you don't have a ring dryer, if you could just walk us through that math very quickly for the upgrade to the MSC?

Todd A. Becker - *Green Plains Inc. - President, CEO & Director*

Oh, for MSC. Okay. Yes. So we have been in that range of right around $0.40 to $0.50 a gallon equivalent, depending if you have a dryer or not have a dryer or if you need 2 dryers. If you have a plant that's big enough, you might need 2 dryers just to process all of that capacity. So it's still in that range. A Shenandoah or a Wood River because they had a dryer, we retrofitted that dryer, was a little bit cheaper capital cost. But in Obion, because of the size of that plant, will be a little bit higher capital costs. So it just depends on all of that, but in that $0.40 to $0.50 a gallon range of conversion.

And that's why we've said at the baseline, $0.15 a gallon, which is the investment thesis was based on. It's somewhere a little under to a little over a 3- year payback or low 30% return on capital. So that has not changed at all in our minds.

Manav Gupta - *Crédit Suisse AG, Research Division - Research Analyst*

No, that's absolutely right. And if corn oil prices stay the way they are, the payback probably would be less than 2 years.

Operator

Our next question comes from the line of Eric Stine from Craig-Hallum.

Eric Andrew Stine - *Craig-Hallum Capital Group LLC, Research Division - Senior Research Analyst*

Just on the carbon side, as you think about the Summit project, can you just talk about any regulatory hurdles there? I know I've read some pushback because there's a view that it could enable coal plants to operate longer, things along those lines. But what -- anything you did on the regulatory side as part of this project?

Todd A. Becker - *Green Plains Inc. - President, CEO & Director*

Well, yes, the team at Summit continues to work on that. Most of what's been signed up on the pipeline have been ethanol plants that produced a 99.6% pure carbon. So very easy cost of sequestration. And that's where we're really -- where they've been focused on. They haven't focused much on the coal plant power side. Some fertilizer type plants have expressed interest as well to the pipeline. So it's really an agricultural pipeline, agricultural carbon, fermentation carbon.

And they're doing a great job in all 5 states, 2,100 miles of pipe to build to get through regulation of the local and the state organizations as well as then with the federal government, the corp of engineers. And obviously, in the infrastructure bill, you could see that came out, there's lots of opportunities for carbon infrastructure that want -- that they're willing to discuss financing with as well.

So I don't think we put that -- I don't think they would have probably put that in there without the thought that these pipelines probably get built, especially a carbon pipeline. If you think about -- there's been still plenty of oil pipelines that got -- even recently that came into service in the last

10 or 15 years. But I think this carbon pipeline has, from our viewpoint, has a great chance of success. We're involved early in it. We're a believer in the team and in the company. And we think that this pipeline, because of the way that it's structured through 5 agricultural states, all the way ending up in North Dakota, everything that we've seen has given us broad support from a government policy perspective. And obviously, permitting and those type of things need to continue on. But so far, everything we've seen as a potential shareholder and a potential investor has been positive.

Eric Andrew Stine - *Craig-Hallum Capital Group LLC, Research Division - Senior Research Analyst*

Got it. That's great color. And maybe last one for me. Just you mentioned that you are undertaking the internal analysis on your potential involvement? Any time line on that? Or is that kind of more open-ended and details to be announced going forward?

Todd A. Becker - *Green Plains Inc. - President, CEO & Director*

No. I mean we've assembled a diligence team, external and internal. We think we have some of the best and brightest from both sides involved in this diligence process. We're not -- I don't think we're months away from making decisions. I think we're -- it will be quicker than that. We've been at it for a while.

The Summit guys want to get the Summit Carbon Solutions pipeline, the Midwest Carbon Express wants to get started on funding. And yet, it will be gated at each threshold. They'll call more capital. And we think that fits our needs as well from a standpoint of funding. But it's definitely something we're spending a lot of time on. And I think it will be starting to come to fruition shortly to make our determination on what we want to do for Green Plains shareholders.

It is a great opportunity for our shareholders. For us, we are the biggest shipper to date signed up. But there's other shareholders, obviously, that are large and shippers that are large. We were an initial investor in the development company as well for some at-risk capital. So we think we're very well positioned. And when you look at a $4 billion to $5 billion pipeline, when you take 45Q tax credits on top of value of carbon, we think the participating as a large shareholder and part of the development company could pay -- could reap great rewards for our shareholders.

Operator

Our next question comes from the line of Selman Akyol from Stifel.

Selman Akyol - *Stifel, Nicolaus & Company, Incorporated, Research Division - MD of Equity Research*

So thinking about Green Plains Partners and sort of your 1.1x coverage ratio implies pretty significant step-up in distributions. Is the goal to be where you were at before you cut the distribution?

George P. Simpkins - *Green Plains Inc. - CFO*

Well, we won't be quite where we were simply because we don't have the same throughput volume just from the sale of plants. But yes, in effect, we're -- we had given guidance prior at a 1.1 coverage. We'll be doing the same. So you can back in the envelope that and come up with what distributions would be on an annual basis. The partnership does have significant liquidity and will continue to have significant liquidity. And the Board will consider what to do with any excess liquidity over and above a 1.1 coverage or whether or not they believe they can lower it below the 1.1 coverage.

But that is the plan as of now. And if you do the back of the envelope calculations, you'll see that it's returning a significant distribution back to the shareholder, to the unitholders.

Selman Akyol - *Stifel, Nicolaus & Company, Incorporated, Research Division - MD of Equity Research*

Understood. And I guess kind of going back to the liquidity, I guess, and I'm trying to think about growth, it seems like your leverage will be pretty low, but where you've got a sort of a $60 million cap there. So I'm just kind of wondering, would you have to then seek additional outside financing if you wanted to grow the partnership? Or should we just think of the partnership just sort of being steady state and just sort of returning cash and just sort of running through the contract length, if you will?

Todd A. Becker - *Green Plains Inc. - President, CEO & Director*

Yes. I don't think you should think of it like that. I mean, obviously, the first and most important thing we needed to do was refinance the line this year and get to a point where we can resume distributions to get the partnership on solid financial footing and looking forward to the future. And we've accomplished that. I think that was a worry of some, but we're not -- we weren't quite as worried, but we knew we'd be able to get some financing done.

But I think doing that, number one, is the step 1 in a multistep process to determine what the best future of the partnership is. It's not going to be just have a partnership and run through the contract. I mean I don't anticipate -- that's not our strategy. But we also have to determine the long-term viability of MLPs, what can we do with this, does carbon ever fit into it. And in the future, we'll have to look at that. Again, no -- we haven't spent a lot of time on that. But those are things that by having the optionality of the pipeline investment, that might be something we look at in the future.

But again, I think this is one of the last MLPs to go public, and it gives us great optionality as an MLP but also as a GP at Green Plains Inc. I'm not sure we're ready to give up that optionality and what to do with it. There's always going to be opportunities that we should be looking at. Yes, the first and most important thing was to, number one, refinance the debt; and number two, resume the distribution. And then from there, we can consider the strategic aspects of moving forward with this.

Selman Akyol - *Stifel, Nicolaus & Company, Incorporated, Research Division - MD of Equity Research*

Got you. And then just last one for me. Can you just remind us how long those contracts run through?

George P. Simpkins - *Green Plains Inc. - CFO*

Eight years. So 8 years from just about where we are now. So there's -- we actually increased those back when we actually did the sale of the Ord plant. And so it's 8 years effectively July, call it, 2029, I believe.

Operator

Our next question comes from the line of Adam Samuelson from Goldman Sachs.

Adam L. Samuelson - *Goldman Sachs Group, Inc., Research Division - Equity Analyst*

Todd, a lot of ground's already been covered here, but I wanted to circle back first on high pro. And you talked about some of the kind of ongoing conversations with a variety of different customer sets for 2022. And maybe just help us think about with where Shenandoah has been operating consistently. I mean, do you think between Shenandoah and the Wood River starting up in the third quarter, just are we at a point for 2022, where we should be thinking about the offtake of those facilities being purely at the 50% level? Or do you think that we're going to be seeing meaningful amounts of volume being contractually committed at higher protein content? Just help us think about the range of outcomes in terms of price realization and your ability to move up that J curve.

Todd A. Becker - *Green Plains Inc. - President, CEO & Director*

Yes. I think exactly what you're saying, which is a range of outcomes. We are in discussions right now at 50 to 52 pro on plants, and we're in discussions at higher protein concentrations and determining the value of what's possible and what's probable. As you've known, we've hit 58 protein and even as high as 60-plus. And now it's really we've been working with customers, especially in patent aqua to say, what should we do at a steady state, what are you ready for.

And I would say that there will be a range of outcomes in 2022, where I do believe, obviously, we have to get to that point that we will have sales from 50 pro through 58 pro at different utilization rates with different species and especially in patent aqua. So I think we're going to make some progress in 2022. And I think by 2023, we'll make more progress. But we still are working on protein concentrations, both mechanically and biologically.

And on top of that, we're working on the nutritional solutions of finally putting into some place some of the work that we've done with some of our partners around taste and profiles and nutritional characteristics. So I think we're going to have a little bit of everything in 2022 and going into 2023 and '24, as we start to move up in our quality and move up in our characteristics. I think it will be a portfolio effect, ultimately, trying to get through 2025, '26 to get everything at those higher-valued products. But we should have the start in 2022 to move up with some of our products up the J-curve.

Adam L. Samuelson - *Goldman Sachs Group, Inc., Research Division - Equity Analyst*

All right. That's really helpful. And then I think there was an allusion in the prepared remarks that the CapEx would be -- might be above the high end of your prior guidance. And is that project timing? And maybe broadly, what is capital cost inflation? And just with inflation in metals and materials and labor, having any impact on what you think some of the high pro investments could cost?

George P. Simpkins - *Green Plains Inc. - CFO*

Yes. Very -- inflation, very little at this point, which is one of the reasons why we stepped up and ordered all our long lead time equipment early because we did see a bubble in terms of steel prices and that type of thing. So we actually stepped up and did that.

So the reason that guidance may be higher is really driven by 2 things. Number one is we went ahead and basically purchased all key long lead time equipment for basically all the projects earlier than we planned to. And the second is really based on construction schedules. So depending on how the construction schedules take place during the year, that could drive the number higher if we're more progressive on those schedules.

Operator

Our next question comes from the line of Ken Zaslow from Bank of Montreal.

Kenneth Bryan Zaslow - *BMO Capital Markets Equity Research - MD of Food & Agribusiness Research and Food & Beverage Analyst*

Maybe I missed it, what was the incremental profit from Shenandoah relative to the rest of the portfolio there because of the...

Todd A. Becker - *Green Plains Inc. - President, CEO & Director*

We don't break those numbers out yet, Ken. I think as we bring on more of our protein portfolio in the future, we will do that. But at this point, we're not breaking out a single plant location, except to say we're achieving the results that we expected, and we're doing very well in that business today.

Kenneth Bryan Zaslow - *BMO Capital Markets Equity Research - MD of Food & Agribusiness Research and Food & Beverage Analyst*

Okay. And if I kind of think about that, if you're hitting your return characteristics and the -- looking at the industry margins, they weren't so great. So you would argue that, that business has delivered on expectations on the high pro? Is that a fair assumption?

Todd A. Becker - *Green Plains Inc. - President, CEO & Director*

Well, I mean, over the total amount of gallons that we produce in our total platform, it's a small contribution because it's an 80 million gallon plant over 1 billion gallons. And in that 80 million gallon plant, it's earning the returns that we said. So it's only a small contribution to the margin. Basically, what we said is $0.05 to $0.10 a gallon from our optimization programs were this quarter. Another couple of pennies a gallon from some mark-to-market gains that we had to take this quarter. And the rest was really from yield of the traditional generation 1 platform and increasing the opportunity there and then just the market that was available during the quarter.

So overall, it's still a small contributor because it's 1 plant to 8% of our production for 1 quarter. So margins were a little bit better in Q2 and ended up being better than we expected.

Kenneth Bryan Zaslow - *BMO Capital Markets Equity Research - MD of Food & Agribusiness Research and Food & Beverage Analyst*

Okay. My next question is when you're thinking about bringing on Wood River, Obion and Mount -- and Central City, what type of array of customers are you looking at? What is the composition that you're seeing right now at Shenandoah? And then how do you think that being developed? Are you looking primarily at the pet food industry, which is a little bit stickier? Have you developed markets in the protein processing business? How are you thinking about that? And where are you getting interest and how you're building the portfolio around these new facilities?

Todd A. Becker - *Green Plains Inc. - President, CEO & Director*

We think Shenandoah, for the most part, will remain in pet through next year and beyond. We think part of -- or a large part of Wood River will probably end up in pet as well. And then we've also shipped into dairy. We've also shipped into aqua. And we think 2022 will be a big aqua year for us as well. So I think we'll come into 2022 really with all of the species, probably not as much on swine. But I would say, pet, aqua, dairy and even some poultry for the all-veg diets and a replacement for some other ingredients, I think we're starting to see that in poultry as well and some interest.

So I think we'll come into 2022 and really be shipping into 3 to 4 main markets next year at many different protein levels and concentrations as well before we even get into kind of characteristics of what we can do for our customers.

Kenneth Bryan Zaslow - *BMO Capital Markets Equity Research - MD of Food & Agribusiness Research and Food & Beverage Analyst*

Okay. And then just the cost that's associated with the incremental sales force and all that, how does that change the margin returns? Does that change anything materially? And then I'll leave it there.

Todd A. Becker - *Green Plains Inc. - President, CEO & Director*

No, I don't think so. I mean every -- obviously, every $0.01 that we add over the whole platform is about $10 million if protein adds $0.01 across the whole platform. It will probably eat into some of the first $0.01 out of the $0.15 going up to much higher levels of margin contribution. But what we talk about is we have to build this sales force. We have to build these nutritionists and scientists.

But we had a lot of them -- we have a lot in our numbers already today. But we do still have a significant amount of people to hire. But again, labor has never really been the big driver behind this business in terms of our cost structures. And so I think it will still remain under control, and I don't think you'll see much change. I mean our SG&A will probably go up over the next couple of years at corporate, but I don't think you'll see a significant uplift.

Operator

Our next question comes from the line of Luke Washer from Bank of America.

Luke Emerson Washer - *BofA Securities, Research Division - Research Analyst*

I wanted to ask about your corn yields, again, clearly, a great quarter with regard to corn yields. I think it was 0.84 pounds/bushel, which I think is a quarterly record. How much of that is driven by Shenandoah versus are you potentially doing other debottlenecking at your other plants? Can we expect this kind of yield going forward and moving up higher as you roll out that MSC technology?

Todd A. Becker - *Green Plains Inc. - President, CEO & Director*

Yes. It is not just from the Shenandoah, although we are definitely seeing what we needed out of Shenandoah in terms of the MSC in the guidance we've given you. We're moving up all of our yield before we even put in MSC protein as it was a once-ignored part of the process because it only contributed a couple of pennies. But with -- when you take a look at $0.64 oil or $0.65 oil and you look at the contribution from -- or the sustainable corn oil that we produce, you're talking about potentially in the teens per equivalent gallon. And so now we focus on it a lot more. There's definitely debottlenecking going on at all of our generation 1 plants to more focus on increasing the yields of corn oil to take advantage of these prices and add more value.

If you take a look at margin contributions through the first half of the year, it was definitely over about $0.10 a gallon of margin contribution from corn oil. And traditionally, it's been $0.03 to $0.04 a gallon. So -- and it's going up from there at $0.64, $0.65 oil. So we might as well focus on something that's paying -- what we think is paying the most in terms of contribution and opportunity and consistency.

But we have absolutely been debottlenecking our generation 1 systems which then gives even a better opportunity when we start-up an MSC system. So we can start pushing towards 0.9 and 1.0 pounds per bushel yield from a traditional corn oil processing business. By the time we add Fluid Quip on top of that, we think we could be a 1.2 to 1.4 pounds per bushel by putting a Fluid Quip system in. And the math on that is just significant for contribution to our future.

Luke Emerson Washer - *BofA Securities, Research Division - Research Analyst*

Sounds good. And just one more on what you were talking about with regards to renewable diesel and your potential to get in on the economics there. Are you looking at potential JVs or an equity stake? Can you provide a little bit more detail on what you're thinking? And is this a part of the due diligence that you were talking about earlier?

Todd A. Becker - *Green Plains Inc. - President, CEO & Director*

Yes. Listen, I think the market has woken up to the fact that there's more [RD] plants coming on than oil capacity available. And it's really having a significant effect on the price of your inputs. And so now you have to focus on the next step, which is CI and carbon intensity and to get paid on that. So when you take a look at what the margin looks like with a lower CI of fats and distillers corn oil versus a soybean oil, you have to have that included to make the economics work because you can't just build this on 100% soybean oil.

And I think that was the fallacy that the RD market sat on is that there's enough oil for all of these projects. And if you look at all the projects on the board and some of them being built, some of them being started up, some that are in construction and some of that are under development, I think that explains a little bit as to why the soybean crushing industry has done so well and why there's so much opportunity there, but also why we are doing so well in our oil business.

So our view is -- and we have been in discussions with how do we participate -- if you want all of our oil, and we believe we can consolidate other amounts of oil within our supply chain, if you want all of our oil and you want that committed to your project, there's a -- we're not just going to do that without participation in some of what they're earning.

And I would tell you the discussions from 6 months ago and a year ago, where they basically told us we don't need you and you're not going to get anything to today, whereas we need your low carbon intense oil and we will help -- and we will allow you to earn an outsized return and participate in the margin structure that is in place for renewable diesel. Those discussions have completely changed course and I believe are available to us. And we will commit all of our oil. And in my view, we will commit all of our oil to a partnership. And I think that's going to happen.

Operator

Our next question comes from the line of David Driscoll from DD Research.

David Christopher Driscoll - *DD Research LLC - Founder & CEO*

Great. First off, I'd just like to say congratulations on the refinancing of the partnership. I remember well where the company was in July of last year. So really great job guys. It's a big deal. Todd, I wanted to ask about the regulatory environment, some of your insights. There's been a lot of events that have happened in the last quarter. So E15, vapor pressure waivers, RFS volumes, what are your big picture thoughts, concerns? Where are we headed?

Todd A. Becker - *Green Plains Inc. - President, CEO & Director*

Yes. So obviously, not a lot of wins, but how we look at it is the first cut of protein is worth $0.15. So first cut of oil were $0.12 and the first cut of sugar is worth $0.60. So when you take a look at all of that before we even have to worry about ethanol, we think we're well positioned in any regulatory environment that exists. We also believe that you will see expansion of blends even in this environment because of the ability to earn outsize return on blending more ethanol through the pump. We're starting to see some markets start to adopt to that, which is what we've seen.

Obviously, we want return the export market, which should be very helpful. If we had that today, then we'd be in very different shape this quarter in terms of the ethanol margin. But look, I mean for us, those are transitory issues to our future of Green Plains. If we can if -- well, when we finish all of our projects and when we bring up all of our opportunities in protein, oil, sugar and carbon -- I didn't add carbon on top of that, which is $0.15 right now available just from the California LCFS. But even that's not -- even if that's not there, you've got the 45Q and you have the voluntary markets that are starting to take shape.

So for us at Green Plains, while all of those things are certainly moral losses, I would say, more than us, we're focused on the future and leaving that in the rearview mirror, which again is $0.15 from the first cut of protein. You could use your imagination from there on how much we can get from that and what we control around the J-curve, $0.12 to $0.15 on oil, $0.60 on sugar, $0.15 to $0.30 on carbon, and all of a sudden, you've got something that's very, very special. And that's how we're looking at our future, and that's the blue sky opportunity that exists for this company.

And we're very -- look, owning and controlling the IP, owning the development opportunities around this very important portfolio that our Fluid Quip partners have developed that is so important to the future, I think we can look a lot at that rearview mirror today. Although obviously, the industry definitely needs some wins. From our standpoint, we're focused on other things today.

Operator

At this time, I'm showing no further questions. I would like to turn the call back over to Todd Becker for closing remarks.

Todd A. Becker - *Green Plains Inc. - President, CEO & Director*

Yes. Thanks, everybody, for coming on. As you can see, we have some very exciting accomplishments last quarter and was ahead of us. Definitely very excited about all of our verticals. Protein, oil, sugar and carbon have massive opportunities ahead of us. We're moving on a lot of these opportunities. We think that's going to be very exciting for our shareholders.

We believe that we are the most exciting ag tech and innovation platform in agriculture today. And there's no other opportunities that are similar to this in a company our size with the market cap that we have today and the opportunity ahead of us.

So thanks for all of your support. We look forward to next quarter and be giving you more updates on everything we're doing in all of these verticals, and we'll talk to you soon. Thank you.

Operator

Thank you. This concludes today's conference call. Thank you for participating. You may now disconnect.
