Podcast #80 – Grant for 3 Hydrogen Fuel Stations in Colorado

Brian: Well, hello, everyone, and welcome to a special edition of the Hydrogen Nowcast, for January 13, 2023.

Now the reason this is a special edition is that we have an historic announcement to make. We just learned on Thursday that the US Department of Transportation has awarded a grant to Colorado State University and New Day Hydrogen for three hydrogen fuel stations in Colorado. Now, these will be the first public hydrogen stations in Colorado, and we expect them to initiate a hydrogen transportation market here. So to talk with me about this is Seth Terry, who's the CEO of New Day Hydrogen. Seth, welcome to the show!

Seth: Thanks, Brian. It's good to be back here, especially on the heels of such great and welcome news.

Brian: Yeah, well, you're certainly no stranger to the podcast, so glad to have you back. You know Seth, deploying hydrogen fuel stations is something that I've been working toward for about four and a half years now, and you have nearly as long. But in that time, New Day Hydrogen has laid a great deal of groundwork that's led up to this proposal and award. Could you talk a bit about the work that new day hydrogen has been doing?

Seth: Absolutely. We have spent the bulk of our energy and time working on the technoeconomic analysis for producing hydrogen on site. We recognize that there are significant challenges currently towards delivered hydrogen, and for that reason, we looked at the distributed model using electrolysis, producing hydrogen from just water and electricity at the point-of-need .

Towards that end, and in order to understand the economics underneath that, we worked extensively with an EPC firm on an early design and understanding for the costing and availability for commercially available equipment. We wanted to do this so that we could de-risk the system as much as possible, really working from the Jigar Shah creating-climate-wealth model. So through that, we understand what the costing looks like. We ran that through a model that we did extensive work on pro forma financials, and really established what we thought was the ideal, smallest design that we could produce affordable hydrogen with.

Brian: All right, so part of that process, obviously, is you've got to have customers for the hydrogen, and I know that New Day has worked extensively with fleets to bring them in to be the customers. You've worked with the City of Denver to identify a site, and then, of course, there's investors. So why don't you talk a little bit about the fleet engagement, which is really part of the business model for New Day.

Seth: Yeah. So the important piece there is, of course, that we be able to match with fleet demand. And I think you and I probably appreciate as well as anybody that's been in hydrogen that that can be a real challenge. There's a lot of pressure out there right now to produce large amounts of hydrogen or to pair for large production of hydrogen in order to bring the unit cost of hydrogen down. But that's going to be difficult to support the investment that goes into that equipment in the early stages while we're building up demand.

And so really, that informs why we went, to the extent that we did, to develop small scale design. With that, we can work with our fleets so that they only have to have a few vehicles in order to be able to help us support both affordable hydrogen for them, as well as the CAPEX that goes with that. So we have worked with a number of different fleets, originally providing us letters of support for our early stations that we anticipate, particularly in Denver, and working with them to move into Letters of Intent so that we can understand what the demand looks like effectively. These are agreements that point to our promise to provide hydrogen and their promise to take it off. We look at the pricing around that, and then this helps us. Then on the other side, that you mentioned with going out and being able to seek investors to help us back the equipment purchase, right.

Brian: Well, I really think that's key. And I don't see too many other companies that want to put up hydrogen fuel stations going out and enlisting those customers like new day has. And possibly that's one of the reasons why the Department of Transportation gave the award to CSU (Colorado State University) and New Day.

Let's talk about the EPC firm. I know you mentioned that, and what you're talking about there is John Cornish's firm. I think some of our listeners may know of John Cornish, who's been in the industry for a while. And it's a little bit confusing that the name of his company is also EPC. And listeners, their

website is EPC4H2.com. And so that's EPC number 4, letter h number 2. So, Seth, how's it been to work with John and his son David?

Seth: John and David have been great friends through this process, and John is a recognized expert in North America with respect to hydrogen, both at the production and the fueling side. So it's been wonderful to rely upon that expertise, both on the engineering side, but also on the assembly side.

Another thing that is great about John's firm is that they have invested in the capability to assemble systems just as the ones that we have proposed, meaning that these are containerized, modular systems where they can bring in the equipment componentry for the system that we've spec-ed out and then integrate the equipment inside of them in order to be able to deliver ultimately to our customer sites. So that is really, I think, one of the full suite of services that he can provide there is wonderful. And again, his commitment to hydrogen and to the future of zero emissions in transportation is really one of the key factors there.

Brian: Yeah. And the nice thing, of course, about EPC is that they're kind of a one stop shop in that they can do the engineering, the design, and the fabrication. Plus they help out with the permitting and the site installation of the modules and the operation and the maintenance once it's set up.

Seth: That's a really key point there, because this is going to be one of the first-of-a-kind facilities in the Colorado Front Range. And as a result, it's great to have that experience and expertise, to be able to go and speak to the local jurisdictions having authority, in order to help them understand the systems that we're putting in, the facilities we're putting in.

Brian: Yeah. Thanks, Seth. Well, why don't we move on to a description of what these fuel stations look like and where they're going to be and so on and so forth.

Seth: Yeah. So we were fortunate enough to partner with Colorado State University. As many people may know, they have three campuses, separate campuses, but, of course, all related to some extent. But up in Fort Collins, in Denver, CSU Spur, and then CSU Pueblo campus as well, all of them happen to be right along I-25, which is a recognized transportation corridor, obviously, and one where there will be a lot of advantages in starting to implement zero emissions fueling. So that's one of the great things that we were happy to bring along, and I think was very innovative in the proposal that we put together to the dot.

Brian: Great. Well, these, as you mentioned earlier, are modular containerized systems. They do on-site electrolysis, and we'll talk about that a little bit in a minute. But the initial design is set up for 210, with a growth to 420, which, as you mentioned earlier, there's a need to start small because most fleet users aren't going to want to buy or change over all of their vehicles to hydrogen right off the bat. They'll probably want to get their feet in the water a little bit with just one or two vehicles. And then the other plan is that these stations will support both. 350 and 700 bar dispensing, so all vehicles will be able to be fueled by them.

Seth: Yeah, that's true. One thing that I would just for clarity's sake, they are 200 kilogram per day modules. The growth would be adding basically stacking one module on top of the other. And this really fits with our plan to be the service provider for fleets as they take their first incremental steps. So being able to stack a number of these one on top of the other in relatively small footprints, servicing a relatively small increment of additional vehicles, and be able to do that until such time that there are larger delivered, and, quite frankly, potentially better economics around being able to deliver hydrogen on site to these facilities. So we really see this as an early step fleets can take with us prior to what may be the much larger steps that could be taken on a regional basis.

Brian: Well, that's right, because these modules are intended to seed the market. They're not intended to be long term stations. That would be something obviously much larger. But I think a lot of listeners in other places in the country and in the world might be surprised to hear that these stations are going to use electrolysis. And I know you mentioned earlier that the analysis really led to that, but tell us why that really kind of makes sense here in Colorado and probably other places, as.

Seth: I mean, I think, again, it makes sense in just about any market right now, unless you happen to be located, for example, next to a refinery in Texas, where they might be able to provide a very low-cost hydrogen, and there may be ways of pipelining it or delivering it in another manner that might be very, very cost effective. Otherwise, you're talking about high pressure tube trailers and delivering what really amount to relatively small amounts of hydrogen for fueling just does not make sense. So, really, that's why we identified the distributed model. The other benefit of being able to produce on site, in addition to not having to transport the hydrogen, is that we are able to use a non-fossil source for the hydrogen atoms. So we're splitting water. So that's, I think, a real advantage here in that we're not using methane as our initial atom source for hydrogen.

So I think those are some of the benefits. One other thing that I just felt like we wanted to talk about related to the scale of things, because scale does matter, particularly when we're talking about electrolysis. These systems are pretty small, as you've indicated, 200 kg per day, just so that listeners can understand. This really supports, on the order, we think, three to five heavy duty tractor trailer type class, eight vehicles, or maybe ten to 15 medium duty or buses somewhere in between. And so what we're talking about here are very limited numbers of vehicles in order to be able to support the economics for our systems.

Brian: Well, that's, you know, another advantage of on-site electrolysis is that it avoids disruption of supply. That's been a big issue in California, where they just couldn't get the hydrogen supplied and had to shut down. Now, the electricity is going to come from the grid, but our intention with this system is to try to get agreements with the utilities to receive renewable energy power purchase agreements, if you will. And, of course, for now, that's wind and solar, but someday that might be geothermal, and so that way it can be assured that the hydrogen is green because the electricity is green. Coming to it.

Seth: Yeah, I think an important piece here is that there's been a lot of penetration of renewables onto the grid over the last three to five years, and this is a trend that is very likely to continue. So regardless of even being able to use recs or power purchase agreements, there is going to be an increasing preponderance of green electrons on the system, and as a result, there will be more and more of the hydrogen that we would be producing would be green at the outset, even again, without the REC's or PPA's. Ideally, we'd be able to locate and be able to take direct solar or wind resources and use those to be able to produce hydrogen. But again, we're producing hydrogen at the site where we anticipate fueling, and that may well be in a congested area, and one that does not necessarily have availability of direct sources of solar or wind.

Brian: Right. Well, as we said earlier, this program is really executed by Colorado State University or CSU and new day hydrogen. So let's talk about why CSU, or maybe more importantly, what the responsibilities will be of the two organizations.

Seth: CSU has a lot of experience with respect to managing grant awards, and as a result, they are a trusted partner for the federal government in that respect. And so that's a great resource and will allow us to focus on execution of the stations rather than managing the grant award, which is a significant responsibility under a federal grant. Additionally, of course, they've got wonderful resources in terms of, obviously, the powerhouse, the Energy Institute up at Fort Collins, as well as direct access to what is a great community in Globeville at the SPUR campus, and one that we've been very interested in spending a lot of time trying to meet with folks in that community in the Globeville area, Swansea neighborhoods, and where there could be also potentials for workforce development. And that's, again, another area where CSU Pueblo has an awful lot of experience. And Pueblo, of course, is a great place for energy transition projects. And so we're really excited to be able to work across those three campuses with Colorado State University.

Brian: Yeah. And, of course, the CSU Energy Institute is not a stranger to hydrogen. They've been working with hydrogen for almost a decade. I know they had students convert a Chevy Nova or Impala or something like that over to hydrogen and fuel cell a number of years ago. I should also mention that Dr. Brian Willson, who's the executive director of the Energy Institute, is one of the founders, along with me, of the Colorado Hydrogen Network. So we've had a long standing relationship with them.

Well, we've been talking about the three sites, Fort Collins, Denver, and Pueblo. And you mentioned that those sites were picked because those are the three CSU campuses. But I think the Denver site in particular is really fascinating, and that's the one that really has received the most emphasis and the work with New Day Hydrogen. So tell us some things about that site and the work that's been going on with the city of Denver, as well as CSU and some of the benefits to that neighborhood as well.

Seth: Yeah, well, that whole area has been undergoing an awful lot of revitalization, and a lot of investment has gone in there as well. And so that's an obvious place where we were interested in being able to try to implement a new solution. It also happens to be one of the most transportation impacted and emissions impacted communities in the state as well. And so with that in mind, that goes back to our interactions with the community members there, particularly with Armando Paellan and a number of other folks, Green Latinos in particular, who have been very excited about the idea of having actual projects come in that could help them realize the benefits of some zero emissions. Beyond just, of course, the emissions, the other attraction of electric vehicles will be the quiet operation. And so a number of these things are really things that we're excited to be able to deliver on

there. We're excited to have the support from CSU spur towards this. And again, looking in concert with the city of Denver and potentially see that and being able to site the station. Yeah.

Brian: And we should mention that this happens to be really the dead center of Denver, where Interstate 25 and Interstate 70 cross. So certainly traffic on both of those interstate systems, which are the major ones in Colorado, are going to have access to this station. Now, that's probably not the part of town where most people think about buying their gasoline, but certainly it's central enough so that the first initial station can kind of equally serve a lot of Denver. And the traffic that goes out to the airport goes past this location. And so it's really a great spot, I think, and I should also mention just as an anecdote, that that particular part of town is where the silver and gold refining plants were. You know, Colorado has so much mining, not only silver and gold, but lead and other minerals. And a lot of those were brought to this neighborhood and smelting was done back decades ago. And so it's a pretty polluted area. So having something like this go in that's clean really is a benefit to that neighborhood.

Seth: Yeah, they're definitely excited about it. We're excited about it. We think that it's a win-win for everybody. One statement that I would want to just clarify there. We are working on a demand driven approach here for the fleets who would be using this. So although we are looking at a public facing station, we're certainly not looking with a small station like this at being able to serve widely beyond the area. It's wonderful because it is central, but that's another benefit here that we have with respect to the other stations that we're looking at. With CSU and all being along I-25, they can work as nodes in an emerging network, and they can be beneficial, potentially, for fleets who may be operating between those different nodes.

Brian: Well, that's right. And these modular stations are intended to seed the market, and once the demand exceeds the supply, they could be moved to another location to start seeding somewhere else and be replaced with a permanent brick and mortar type of station. But you've got to start at the right scale, and right now, there's nothing. So the scale is small.

Seth: Yeah. And to that point, we see ourselves as an outpost supplier, if you will, for hydrogen. And just about everywhere in North America is an outpost right now, even California, plenty of outpost locations, even where they have the greatest network of hydrogen fueling available in the country.

Brian: Well, Seth, to maybe speak to the schedule a little bit. So when can I and others along the Colorado front Range get a fuel cell vehicle and start buying hydrogen? What do you think the lead time is on this?

Seth: Yeah. Well, so again, although we will be public facing, our focus is on the heavier duty fleets. That said, we would certainly welcome some folks coming into fuel. And as soon as we hit go, as soon as we have the demand identified from enough fleets, we are ready to go probably in about twelve to 15 months. So really, most of that time is related to bringing in, acquiring the equipment and then assembling the equipment, as I said up in John shop. But we're very hopeful that we're going to be able to hit go very soon. And this dot award that we received helps us get a long way towards being able to hit that go button.

Brian: Great. All right, well, listeners, I've been talking with Seth Terry, who's the CEO of New Day Hydrogen, and their website is all one word, newdayhydrogen.com. Now, Seth, if listeners want to reach out to you, what's the best way to do that?

Seth: Certainly feel free to send me an e-mail. It's Seth@newdayhydrogen.com. You can also find me on Linked-In. And I welcome anybody who would certainly be interested in speaking to us about fleet engagement in any of those three locations we've identified.

We also have a strong emerging opportunity in North Boulder that we're excited about with our partner Via Mobility Services just to the north of their property. So that's another great potential. And then beyond the borders of Colorado, we are also very interested in having further discussions. We've already had them at various ports, specifically in Virginia and in the northwest region, as well as inland ports in the upper-Midwest. So again, I welcome anybody that might be willing to speak to us about that and is interested in speaking to us about that.

Additionally, we are obviously an early-stage company, and all early stage companies are in it for investors. The signal is strong. That has come from both the state of Colorado, who has provided us a grant, as well as from the federal government now. And so please, if you're interested, I would love to tell you a little bit more about the opportunity with us. Thank you very much.

Brian: All right, Seth, well, congratulations on this truly historic achievement to get the hydrogen transportation market established in the US.

Seth: I appreciate the opportunity again to speak about it. And thank you for your longtime support. And my gosh, how many episodes of this podcast now?

Brian: Yeah, this is number 80.

Seth: All right, congratulations, Brian.

Brian: Yeah, thank you. All right, well, listeners, until next time, this is Brian De Bruyne wishing you health and prosperity. Goodbye.