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[00:00 - 00:02] Patrick: And the key part of that is...

[00:04 - 01:04] Host: So you're at the Center for a Collaborative Conservation Seminar Discussion series, and we're going to have a great one this morning. This morning, we are just really pleased to have one of our own at the center give a presentation. So obviously, Patrick Flynn and he is the guy that is leading us and really providing the push to create an environmental market in northern Colorado. So he's going to talk to you today about that. But let me tell you a tiny bit about his background. For those of you who don't know, Patrick seems to think that he wants to get every degree possible at CSU. And so he has an undergraduate degree here then then he got here. Then he went on to the the great program where in business GSC Global socially sustainable enterprise MBA program with an MSC in business then. But hey same thing. And now he is now just finishing his MSC in AG here also as he is here and I don't know what's he going to do next. We're not sure.

[01:04 - 01:04] Patrick: No more.

[01:04 - 01:34] Host: No more [laughs] going to be done. And he came to us about a year and a little bit ago as a fellow. So the foundation gives out 2 or 3 fellowships nationally each year, and he is the one that was awarded in 2010 and it was actually awarded to us and then we awarded to him. But

it's the same kind of thing. It's an honor. And so we're terribly pleased to have Patrick today. And since he stay saying such cool things, I'm going to shut up and let him get to say it. So, Patrick, over to you. [inaudible]

[01:39 - 03:40] Patrick: Well, thank you. Pleasure to be on this side of the podium today, as opposed to the other side where I usually am. And bear with me, I feel a little under the weather, so my voice doesn't usually sound so robust as it does today. But I have the distinct pleasure to talk about the development of an ecosystem services marketplace here in northern Colorado, as Robin said. And it's kind of been incubated at the Center for Conservation right now, but it really is a collaborative effort and that will be a theme throughout my discussion. And there's a steering committee that includes six other people, including Robin, who heads up the SEC. There's Heather Knight, who works for the TNC here locally. There's her husband, Vic Knight of Conservation Biology here at CSU. Josh Goldstein, is also a professor here at CSU and Human Dimensions of Natural Resources. Hill Grimmett, who heads up the local campaign, and David Jessup, whose family owns Silverdale Just ranch down on the big Thompson River near Loveland. So it really is a collaborative effort together with the seven of us and all the stakeholders that we are engaging, pursuing this concept, hopefully to fruition sooner rather than later. As the title suggests, you know, it's really going to be a talk about how we're going about developing this marketplace, this concept here regionally, Northern Colorado, we're in the middle of this process. There's no major breakthroughs. We haven't determined the key to creating environmental markets. It's a very complex idea and concept to actually do these. And so we'll talk about some of those issues as we go along. So no major breakthroughs here. We haven't answered all these other questions that we are just beginning to hopefully answer with other stakeholders as we go forward. But I'm going to talk about a little bit the history of the initiative, the process for going through the structure, the basic structure.

[03:40 - 05:50] We envision that this may how this may develop and a little bit of our plan to get to that vision. But as I said, interspersed throughout this, we'll be talking about the collaborative effort necessary to actually do this. Before I get too much into this, I want to talk about just a little bit about the theory behind ecosystem market. Not really in depth, but just a little primer on what ecosystem markets or environmental markets are, what they're trying to do. And I'm sure the first question I'm going to try to answer is maybe a burning question a lot of you have familiar with this, but what are ecosystem services? And there is a whole host of different definitions ranging from a little more complex and thorough academic definitions to the more simple definitions that they're the things that natural systems do for people. And then there's this one which I borrowed from a number of people that I like quite a bit, is the benefits that humans receive from nature that sustain and enhance human life. Nature provides services to humans. That's really the basis of ecosystem services.

Some examples of ecosystem services are water purification, climate regulation, crop pollination and then recreational experiences. And there's a whole host of these different types of ecosystem services. This is just a smattering of those. So next question is what are ecosystem service markets? And again, there's a host of different definitions out there that are not really too complex. But the one that I really like is a little more worthier than the other ones. But it's an economic structure that allows those who benefit from ecosystem services to pay research managers whose stewardship promotes the provision and production of ecosystem services. So there's land managers affecting things on the ground and different resources. Those resources are providing ecosystem services. So we want to pay those land managers, incentivize them to do good land stewardship that promotes ecosystem services.

[05:52 - 06:43] There's various types of ecosystem service markets. Water quality is perhaps the largest ones, specifically in the United States, that usually is related to nutrient rules and regulations for phosphorus and nitrogen, or even could be water temperature. Wetland mitigation banking is again, is a regulatory driven actually. Most of these are regulatory driven markets. You see, most successful ecosystem service markets have what they call a regulatory driver, something creating artificially or not a demand for ecosystem services. So whether mitigation, conservation, banking is looking at habitat and land conservation and then current markets, I'm sure you all have heard of, which is looking at addressing global climate change. Any questions about ecosystem services or markets before I move on?

[06:44 - 07:05] Speaker 1: Pretty straightforward. I don't know if maybe. We'll get into detail later on. But if you say on the definition, they are poor stewardship promoting professional services. So there has to be some baselines. In other words, it has to be something that I wouldn't do otherwise,

[07:06 - 07:40] Patrick: Not necessarily. Not at all, amigo. I mean, it depends. And that's a very that can be very specific and debatable question, one that we're not probably talking about here. We've got some services and I'll get into this. And on their slide are just the services that nature provides to human beings, regardless of baseline or not. When you get into ecosystem markets, yes, you can get into questions of baselines improving upon the land management, which produces more ecosystem services or improves the services which can be the payment. But even some services themselves don't necessarily have a baseline in the market.

[07:40 - 07:46] Speaker 1: So if you pay the stewards, you pay them for something that wouldn't do otherwise.

[07:46 - 09:06] Patrick: Usually, well, whatever key aspect of this is that the key is that the land stewards are the ones producing ecosystem service it's the actual natural processes, the ecological processes that are producing those ecosystem services. The land stewards just can help manage and guide those and steward those services. So what do they do? And this gets into the more economic theory behind it. Their ecosystem service markets internalize otherwise external costs or benefits to society from the consumption, production or destruction of ecosystem services. And I'll get into that a little bit more. So ecosystem services are considered externalities, which means that markets have failed to develop that property value and include them interaction system. So we don't include the cost of production of, say, water quality from a forest or rangeland or recreational experiences from an open space into the actual management of that landscape per se. So ecosystem markets and our attempt to correct that market failure to properly value and incorporate ecosystem services into our economic system.

[09:09 - 11:34] So get the nitty gritty of this is that land managers tend to maximize production of something. If we don't properly value ecosystem services, they're going to maximize production of something other than ecosystem services. So you want to try to value those ecosystem services so land managers can take a more balanced approach to what they want to maximize from their landscapes. Let's get into the really economic theory a little bit. But they're also both positive and negative externalities, so ecosystem services would be considered a positive externality. They're positive things to positive benefits that we're receiving, but that aren't included in direct system. There's also negative externalities. Global climate change would be an example of that. And carbon markets would be an example of a marketplace trying to internalize those negative externalities into economic system. But what we're trying to do is that, say we have a rancher who has huge rangeland grassland. They affect positively or negatively potentially our water quality in our region. So right now we're receiving usually benefits from rangeland, sometimes negative, but usually benefits, but we're not paying for those. So we're considered free riders on that. In this economic system, what we're trying to do with ecosystem service markets is close that loop so that we are paying landowners for the benefits that we receive from their land management. Now, even further down in this theory is the theory of natural capital, which is defined as a stock of natural resources that yields a flow of valuable goods or services into the future, such as ecosystem services. An easy example of this is to say a forest. And you can think of a forest as, say, a manufacturing plant. Manufacturing plant is a piece of capital investment that would maintain properly, can produce a flow of goods or services or save wages into the future. So a company will invest into a manufacturing plant and they want to use it for 40 or 50 years. They want to maintain it properly to produce those goods and services into the future. Well, forest is very similar. A forest is also factory producing water quality habitat, recreational experiences, etcetera, etcetera. So the theory is that we want to

maintain that natural capital very similarly to how we would maintain a manufactured piece of capital like a manufacturing plant. And so an example is in the forest.

[11:34 - 13:43] Which would help produce clean water for us, which here in Fort Collins means that we can get really good tasting, great beer. So when you think about it, breweries, we think about their supply chain, forests and rangelands are part of their factory. They're producing the really high quality water that can produce our great beer. So that's kind of a really toned down view of what natural capital is. So some examples of ecosystem service markets before I jump into what we're trying to do here in northern Colorado. There's a variety of examples out there. The more famous ones is partnership up in Oregon. They've created a system along a stream or river up there based on a water quality regulation and very successful. And they work with landowners to plant stream banks to reduce the water temperature. So these water utilities had the ability to either meet this regulation could build more great infrastructure, which would cost around 400 to \$500 million. Or they could invest in green infrastructure such as trees planted on stream banks to reduce the temperature of the water upstream and downstream from the wastewater treatment plant to meet that regulation. So that's an example. And there's contracts of landowners can propose a contract. We can do this contracts would be for 20 years. And so landowners are planting trees and they receive payments from the water utility for planting those trees which produce this ecosystem service. The Great River Watershed Water Quality Trading program. There's a lot to say that's a really successful voluntary market as well, and they are working for that. And this wastewater and plants are going to be regulated due to phosphorus and nutrient loading into the system. And they decided, well, we can either build a great structure for about \$200 million or work with farmers for about \$40 million. So they're working with farmers to reduce nutrient application into their into their systems.

[13:43 - 15:15] And there's a whole host of other examples. One more I want to point out is Denver water in the US Forest Service Forest of Fawcett. It's one of the newer ones in the country. It's received a lot of press. So Denver Water in 96 and 2002, there are two big forest fires in the South Platte watershed, which has affected the water quality of Denver water to the tune of about \$14 million in costs associated with that. Expect it to be about \$40 Million in costs of a Lifetime impacts of those fires. So now they're working with the Forest Service to be proactive to help manage that natural capital and risks to that natural capital to get ahead of these issues, to reduce the potential of wildfires and reduce the impact of wildfires if and when they happen that something happened right here in Colorado. So the current conservation exchange. This is what we're naming our initiative now. And again, I'll go more into it. We've created a vision and mission. But right now I want to talk a little bit more about the history of the initiative where we've come from. So the discussion for this

started about two and a half years ago amongst a group of people, including Robin and a lot of people on the steering committee who I mentioned earlier, thinking about the future. We did a great work in northern Colorado with conservation easements, with other aspects of conservation level open space purchases where there's still growing threats and other needs of landowners in the region.

[15:15 - 16:38] So what they're thinking about in the future, how do we maintain this great quality of life that we have, these great natural resources we have into the future? And from that conversation, spreading out the idea of perhaps building or looking at doing an ecosystem services marketplace. So we've done a lot of work. I was hired on a little over a year ago. At that point, we kind of formed officially in the group to look at this and try to push this idea forward. And like I said earlier, it's an amazing group of people we build building these markets. There's the economic theory behind it that drives a lot of the principles of it, but it's really how do you create this as a collaborative effort that doesn't have a whole lot to do with the economic theory behind it. It's more of how do you engage stakeholders together to drive an idea forward. So we reformed sometime at the end of 2010 to get into 2011, more or less, and we started to engage into a scoping process pretty initially. I'll back up a little bit. So after the scoping process, we created a mission and a vision. And our vision is at Colorado, where rural and urban communities join to enhance the natural resources, wild lands and agricultural areas that were independent. And that's kind of getting to the natural capital aspect of this. You really depend on these natural resources for all the benefits we receive from that.

[16:39 - 18:34] Our mission then is to reach that vision is to create a marketplace where we come together to help support the land stewards who positively effect and help produce these ecosystem services that we depend upon. So why develop the exchange? And now we're getting to a slide deck that we typically use with stakeholders. So I'm trying to do it in a different way with your group. So sometimes I'm looking at slides and pause because I'm thinking about what I used to say and what I'm trying to say to y'all [laughs] because it's different. [Clears throat] But we are-, from the scoping analysis and I'll talk more about that a little bit, what came out of it. There's a whole host of issues and I'll get into those those threats and issues for natural resources. But really what we found is that our quality of life is dependent in northern Colorado upon the natural resource of the natural beauty surrounding us. And we actually have that from a survey in 2007 from Fort Collins that the number one asset for Fort Collins is a natural beauty that surrounds us and that natural beauty and those natural resources, provide a whole host of ecosystem services that we depend upon for a high quality of life, includes clean water, clean water supplies, productive soils, open spaces, recreational experiences, habitat and of course, carbon storage for climate change. So doing through the scoping and this we met with 40 to 45 different regional stakeholders. We also hosted a conference last May.

It was a national workshop looking at ecosystem service markets and the connection between rangelands. And we can move that discussion forward. So a lot of national experts would say partnership and other areas came out to provide feedback and where we're moving, which is great, but we came up with really five natural resource issues, primarily driven by number one, which is the population boom expected to happen in northern Colorado.

[18:34 - 20:31] I'm supposed to double by 2040 to 2050, which is going to increase demand for our scarce natural resources. Another big one and this is kind of where the discussion started, was a loss of land stewardship knowledge, especially in those private lands, but also on some of the public lands in our area as well. Family ranchers and farmers and foresters face a whole host of pressures, including development pressure to sell their land for development, low profitability and then scarce agricultural resources, which is a huge driver of this, and also the aging members of our of our agricultural community. There's younger generations aren't entering into these professions anymore for a whole host of issues, including these as well. The pine beetle epidemic that I'm sure a lot of you have heard about is a big threat to our to our water quality. Decrease in stewardship funding is one that wasn't necessarily evident to us. But as you start talking to more and more resource professionals, it really started rising to the top that we all have seen the politics of the past few years. There's a decrease in the federal government, public funding for land management, conservation on both public and private lands. And then lastly, one potential regulatory driver we have is a water quality regulation coming down the pipe. That could happen anywhere from the next two years to 10 to 15 years or not happen. But that would really increase the cost of drinking water in our region unless we're able to do something similar to say, well, limited partnership. What they've done in Ohio and the great Miami River watershed is work with green infrastructure as opposed to building more creative destruction. It's. And so at the end of our scoping, when we came up with this list, we really realized that we've been doing a collaborative effort amongst us and we engaged a whole host of stakeholders.

[20:31 - 22:28] But this is kind of a game changer for us. First off, we didn't really have a strong regulatory driver, which most markets have and develop around, at least initially. And we had a whole host of issues that were broad ranging and interrelated in a number of ways. So we realized that we needed to take our process to a whole new level collaborative effort and really engage a whole host of more and different stakeholders to really drive this concept forward to make it really happen. So again, I don't have a slide talking about collaboration, but is embedded throughout this whole process. So again, at the end, at the end of scoping, we kind of hunkered down our steering committee came up with our vision, our mission and then our goals to reach that vision and pursue our mission. So the first goal is to preserve, enhance our quality of life by raising the awareness of

the rural urban interdependence and the benefits of our healthy rural landscapes and the threats to those landscapes. So again, raising awareness of these issues is our first goal. Second goal, and the key one is to create a marketplace that enables us to reward those land stewards that affect our landscapes, that could help us ensure that we have those ecosystem benefits into the future. And then thirdly, to develop the transaction functions necessary to make it transparent, credible to all the different stakeholders. So we also try to determine what exactly would they exchange consideration, exchange to this marketplace look like? What would it do? We're just now we create a very basic structure around that. We're now and I'll talk about this a little bit later. Now engaging a whole host of stakeholders to really talk about how do we do this? But generally speaking, the exchange would connect beneficiaries, say water utilities, to say, landowners such as ranchers.

[22:28 - 24:21] And we would play a central role in connecting those all together. An example of some pilot projects we have up and running. We say again a water quality projects where we would connect. We look at a water utility, what are their needs related to ecosystem services or natural resources? Say water quality is a big one. And we could connect them with landowners, ranchers, US Forest Service farmers, what have you, that could help them address their need, the landowner that implement a project. And we would have to create an asset or an ecosystem service credit or good or whatever you want to call it. And we'd make sure that that water utility is receiving something fairly tangible for what they're paying to the rancher. That's the very basic structure of what we try to do. These are some pilot projects we get to. I'll talk a little bit more about the future as well. But the very kind of overview exchange. Again, in our region, there's a whole host of beneficiaries from utilities, to breweries, to other businesses to CSU, to local municipalities and counties to recreational lists, to local foundations, whole host potential beneficiaries or buyers of ecosystem services that we're trying to engage. And in the other side, we have all these stewards that's family farmers, ranchers, foresters, public land managers such as US Forest Service, BLM, small acreage landowners and also NGOs such as Nature Conservancy and others that do have some land or conservation easements. And again, what we're trying to do is go through this process of connecting the needs of beneficiaries to large jurors who can address those needs and then measure those and make sure that they're credible. But to do that, we realize that we don't have the capacity or the knowledge to do all of that. So we realize that there's a whole host of intermediaries that are necessary that we need to partner with in developing the structure.

[24:21 - 25:27] So, for example, we need someone to perhaps run a fund for us. Is that the local community foundation that can accept funds to help us set priorities. We need technical assistance to the landowners. So that could be the Natural Resource Conservation Service or others that would say, you know, rancher, you can do practice X, it's going to produce about Y benefits, it's going to

value, perhaps value about Z. So we need to have more technical assistance that we can provide. So again, we need more stakeholders, more partners into this. Again, monitoring and verification. You need independent, credible people, organizations to measure what's going on. And again, from what was mentioned earlier is looking at what's the baseline, what are we starting from and then what is occurring after they've implemented the practice. And that difference is considered an ecosystem service that someone may be willing to purchase. And then lastly, we need a registry or something else. Again, something independent in third party to record those transactions to make sure there's no double counting or other rigmarole in there that would reduce the credibility of what we're trying to do.

[25:36 - 27:43] So now that we have this basic structure and idea in this vision mission, we're really trying to engage the stakeholders in this process to go about how do we reach this vision, how do we go about doing this? And this is really where a lot of the theory of environmental markets is thrown out the window, at least from that side of things. It's really more related to institutional development, which would be more along the lines of Elinor Ostrom and some other papers that have been developed. Who gets to play here? Who are the actors that we're willing to engage? How do we create build equity into the system and a whole host of questions that necessarily get into. But that is really at the point where we are right now is who gets to play, how do we develop this? And we engage a whole host of organizations and we have a list of a little bit later to help guide us because other ones that are playing in this that need from the demand side there to say, yes, you can meet our needs, but we need X and Y and Z to ensure credibility into the system. Same thing from the steward side. Like, we're willing to invest in practices, but we want to know where the payment structure is and everything like that. So we need a whole host of questions that we haven't answered here. We're in the middle of this. Hopefully we'll have an answer in a year or so, at least initially. But we're engaging in this really huge large collider project in northern Colorado to try to develop this. So what we've determined is that we have our steering committee are seven of us, but we've broken up into two groups, one, to focus on developing the exchange structure, another one to focus on pilot projects to prove the concept of the idea that yes, we can, that lenders can produce verifiable, measurable, cost efficient ecosystem services, that someone is willing to buy two huge tasks that we're moving forward with. So again, in the exchange development side and again, engaging community partners in trying to determine demand for ecosystem services, one of the key conservation priorities from a demand perspective. Again, looking for resources, trying to develop a leadership team for the exchange as it moves into the future.

[27:43 - 29:47] And the pilot project side, we have, as I said earlier two pilot projects. They're both water quality projects and ranches. One is at Silverdale Ranch along the big Thompson River. That's

a nutrient reduction, one trying to reduce the flow of nitrogen, phosphorus into the big Thompson. We have another one on Roberts ranch, which is up near Livermore. Let's try to reduce sedimentation project to reduce sedimentation into the irrigation system up north of Fort Collins and determine what are the practices that can be implemented to address those issues. Again, one of the cost of those versus what's the value of those ecosystem services. We also in the scoping water quality and quantity, so water supply or the top two ones that came out regionally, we haven't developed a water supply pilot project yet, but we're in talks in a couple of potential ones. And what we're trying to do with the water supply ones is try to do a win, win win between cities, agriculture and environment. There's a lot of talk about water shared among cities and in our culture. Listen, low crop farmers, there's not a lot of talk about how to incorporate instream flows and repairing habitat into that equation as well. So we're trying to look at that and from the water supplies perspective. And we have a couple of projects for we're in talks with, hopefully one of them will be a showcase for Wash Apply and then other ones, We don't have one in public lands. Considering that Northern Colorado, the US Forest Service owns about 29 to 30% of our of our watershed. It's a really important landowner that provides a lot of ecosystem services. So we're engaged in the US Forest Service also to try to do a public lands ecosystem service pilot projects. And the goals of, of developing the pilot projects, again, establishing water conservation priorities. How do we measure those? What are the best practices to really demonstrate this proof of concept? So that was a structure. And then here are the team members we have on board so far to go forward.

[29:47 - 30:48] And exchange develop team we have business sustainability consultants to the Colorado Water Institute here at CSU, to the Community Foundation. To some other individual financial consultants, to Belgian brewery and other business called Regenesis. So those are the actors, the partners we're trying to work with how to develop this exchange and how it function, how the flow of money come through, how do we develop conservation priorities. On the other end, pilot projects is is a huge question trying to do these collaborative efforts. We have, again, for big times in washed form down in the Loveland area doing water quality testing, which could again could be one of those intermediaries that could test water quality for different projects for us, the Colorado Heritage Program, Fort Collins and Northern water ingredients and water providers, again, federal agencies and then private farmers and ranchers. Again, a smattering of an example of who is on a pilot project team and the collaborative effort we're trying to engage to go forward.

[30:49 - 31:10] Speaker 2: At what stage of the process did you approach these different organizations, agencies? I mean, because you don't want to maybe get going on the ground level, which led to the interesting [inaudible]. Here's our mission and we could have been part of this?

[31:10 - 33:06] Patrick: It's a great question. So we formed and kind of late 2010, early 2011 and we started going through a scoping process which is not horribly well defined. We're trying to engage businesses. A whole host of potential stakeholders. We weren't sure who. To introduce the concept of an ecosystem services marketplace, which is a very weird concept for people to grasp and then talk about-, we're trying to do this here in Colorado. What are your natural resource issues? So we engaged again about 40 or so different people. Some businesses, a lot of them were the farmers and ranchers and the kind of steward side. But we also try to engage in the water utilities as well. So initially, we engage people to introduce the concepts. Way before, we had a mission or a vision or our basic structure down. And from that we came up with our list of what are the natural resource issues. What we're looking for was a regulatory driver to develop a marketplace around. We define it. So when we find one, we realize there's a whole host of issues that ecosystem service markets could address that could also hopefully ensure our quality of life by protecting landowners by or landscapes, by paying landowners for the services that they benefit from. But at that point, at the end of scoping, we kind of sat down and said, there's potential here. There's no regulatory drivers. So we need to engage a whole host of people, not just water utilities and ranching groups. We had to engage a whole host of people to look at all these issues because they do all overlap as well. So once we set up with the we're set up with our mission vision, basic structure, we then went back out and we're continuing to do that right now. We started kind of late last year and into this year it's been, as I call, meeting mania. And again, it's all seven of us on the steering committee meeting.

[33:06 - 34:04] Sometimes together, sometimes as a group, sometimes in subgroups, meeting with these stakeholders to talk about this is our vision. This is the basic structure. This is how we're going to move forward with our institutional structure. Who wants to be on board as we move forward? So now we have a whole host of different institutions and entities on board to move this forward. And we're going to have a major stakeholder meeting, our first one in a few weeks here to come up with specific strategies for both the development team and the pilot project team to move this forward because we hope to publicly launch this in September of this year. Not just saying there's going to be training going on at that point. We want to publicly launch the initiative, have it branded by September of this year. You want to have some goals and objectives completed by the time we do this launch. So again, at that meeting, we're going to engage all these people to determine what's our best strategy to reach that goal. Does that answer your question? [inaudible]

[34:04 - 34:57] Speaker 2: Can I just add something there? I think we were I wasn't sure this was going to work. Actually captured people's imagination and so until two things happened. First, we had consulted enough and generally where we want to go. And then we had a couple individual monitoring that said we have to do this and so we can find this made it really fine. And then at the

same time develop a very strategic process of exactly what we should gauge. We should engage when and then we implement it. Relentless in committee. And I've been really surprised. How-, what positive response because I thought we were really good at the letter. And so it's really been persistence and collaboration, coordination, collaboration, but also leadership. Those were just super, super important. So Patrick is going to use part of that, basically.

[34:58 - 35:37] Patrick: It's been our whole group because at one point in a scoping we're talking about what do we engage stakeholders now to help us create the vision and mission structure, or do we just create that basic mission vision ourselves and basic structure? Then go have something to talk about with our stakeholders, which is what we ended up doing, which end up being the right route to go because we actually had something fairly tangible to talk to people about what we were doing. And that was, I think, the key point and that had been sometime in September, October of late last year. So this is the end of our presentation. So any questions, please?

[35:39 - 35:41] Speaker 3: What do you mean by [inaudible]?

[35:46 - 36:21] Patrick: Financial support and it could be in-kind and other support, but primarily, financial support. So payments to landowners. And again, you know, that's what we think we still have to engage the stakeholders about how do we do this? What is that structure? Is it a one off payment? Is it for restoration practices? Is it you know, I could get a whole lot of different financing mechanism, things like that. But the goal is to try to make recurring payments to landowners. Perhaps on a contract basis, 10, 15, 20 years, which is what others have done with some success.

[36:21 - 36:46] Speaker 3: You also mentioned that the monitoring and verification of the protection of those national [inaudible] and when you said that, you said that they were going to be the change of production. But obviously conservation is going on. You know, there are a lot of sports in the land, so [inaudible].

[36:52 - 38:27] Patrick: That's one of the debates of these markets. And one that I'm personally very fascinated by. Do you pay landowners that are already doing good work in the land or are you going to try to pay lenders that have maybe by no fault of their own a lot of times. By no fault of the road. There's been poor land management or impacts on the land which are reducing or hindering ecosystem services. So you going to pay them to restore the land or help them restore the land, then make payments to them? And what happens to all the people that have been doing the good work already? So there's a huge issue there. And one example up there was the Mackenzie River watershed outside Eugene, and they have the brush shed concept. So they're doing is they defined a really key critical landscape in their watershed, about 6000 acres of repairing forest habitat that's

mostly private landowners hands that they want. That's their priorities. They're going to focus on that watershed. So you've scoped out a whole host of other landowners. That's their focus. And they're going to make payments to landowners in that area that meet certain criteria developed by US Forest Service and Defenders for Wildlife. So if you meet that criteria on your land. You will receive payments. And those that don't meet that criteria will be incentivized to improve their land management to meet that criteria so they can make payments, they can receive payments in the future as well. So a lot of what we've been focusing on, at least in our pilot projects initially, just kind of prove the concept and have something on the ground that people can see and feel, are more restoration style projects.

[38:27 - 39:07] We're working with some ranchers to help restore landscapes that then could produce ecosystem services into the future, because right now the provision of ecosystem service is so low because of some things in the land they implement the practice they can improve that provision and that difference is what we make payments for. So it's a it's a key question and one that we haven't answered necessarily. That's why we're engaging stakeholders to say, what do you want to pay for and what are the conservation priorities in our watersheds? So again, like I said, we haven't answered many of these questions. This is more about the clever effort we're hoping to go through to answer those questions. And hopefully in a year we have some more definition.

[39:09 - 39:31] Speaker 4: The conversation question. Why isn't it called the Northern Colorado Conservation Exchange? And then my follow up question is I got a sense of all the roles of the executive or the steering committee besides be local. And I just wanted to hear what they would have contributed to the process.

[39:32 - 40:45] Patrick: So two questions so far. We're calling the Colorado Conservation Exchange because we really would like to scale this up. If we can prove this to happen in our watershed. We'd really love to scale this up across Colorado. That said, we have to kind of put the concept somewhere. So we're trying to prove the concept, roughly speaking, in the big tops and watersheds. We hadn't necessarily scoped out Grand County because there is a chance of diversion of water, but we're focusing more or less the big types of watersheds that prove this concept. And we have this great host. I mean, if we can do this in Colorado, we're going to do it up here. And then if we can prove it here, hopefully we can expand upon that what we've learned across Colorado. So that's why we're calling the Colorado Conservation District. Secondly, local is critical because that connection to local landowners and also Hill was on a committee. It's kind of, as you say, a kind of token business guy. So he's understanding the business aspect of why businesses may want to contribute to this. And he provides a critical piece connection to landowners understanding more of the

economic system of the region and also providing some business sense to our steering committee. I'm not sure if you want to add anything.

[40:49 - 40:53] Speaker 5: When you say scale up to Colorado, are you including multiple watersheds?

[40:55 - 41:29] Patrick: Of course, especially when you-, I mean-, so I shall say we're focusing on water because that sculpting, that's kind of the obviously low hanging fruit, water supply and water quantity, the things that people are most concerned about. We hope to do a whole host of ecosystem services after we prove the concept and get up and running based around water. But when we look at water, it's a very localized kind of systems where current markets can theoretically happen anywhere because a global pollutant water is a very localized kind of pollutant or issue. So-, but yes, if we were to scale it up, it would be through a whole host of different watersheds across

[41:30 - 41:30] Speaker 6: [inaudible] water transfer options?

[41:33 - 41:58] Patrick: Well, there's already developed water markets and we're really well developed for better for worse water markets in Colorado. We have I mean, I wouldn't be able to answer your question. I mean, what we're focusing on is that win win between cities and the environment that we can create projects that prove that concept and that can cash flow through, then. That's what we're going for.

[42:00 - 42:38] Speaker 7: You just touched on [inaudible]. I can see how particular the waterfall was [inaudible] to protect and restore water quality. But I can see that the incentive for that to get to the seller-, sorry buyer side of things but for other ecosystem services having [inaudible]. What are the incentives for buyers?

[42:39 - 44:23] Patrick: So it's the million dollar question. So, again, we haven't answered that question yet. One way of looking at it. There's a number of ideas we are exploring. There's a whole host of ideas that we're exploring. We're focusing in water now, but related to other ecosystem services. One idea is, if a rancher improves land management or grazing or implements a project, it could improve water quality. It could also sequester carbon sequestration. It could also produce more habitat. So you could do what they call bundle or stack ecosystem services on top of each other. And in doing so, if you can create find maybe a minor buyer for for say, carbon sequestration or or biodiversity habitat, they can provide a little bit of money that could help make that credit. The all three credits, cash flow. So make it cost efficient where the amount of terrain, all the transaction costs associated with these markets are huge. So a lot of times you can produce one credit and one

water quality credit, but the value of that would be half of what it costs to monitor the transaction costs. But stacking is one way of looking at doing that. Creating perhaps a recreational fund or some other aspect is another way that we're thinking about perhaps doing something related to recreational open space attributes. But that's the million dollar question. There are some drivers, regulatory drivers in our watershed for about a variety habitat related to Dangerous Species Act, but those are kind of small opportunities and may not be great for a marketplace as more as a one off transaction between ne entity and another.

[44:23 - 44:26] Speaker 8: And do you see a role in that [inaudible].

[44:33 - 45:11] Patrick: Of course. Again, and those are very localized within I think, eight digit watersheds. So the powder would be-, so if someone is going to impact a wetland within the watershed, then they'd have to, you know permanently or usually permanently protect another piece of what wetland. In that same watershed as well. There isn't a whole lot of potential development that we've seen out there related to watershed. There is for habitats or conservation banking. There is some potential out there. But again, we're not sure if we're going to be a good umbrella for them. We're going to add a lot of value. We were hoping that we could, but we'll we'll see.

[45:12 - 45:21] Speaker 9: And is there-, do you see in the future some way to connect? [inaudible] pre-existing markets for carbon markets.

[45:21 - 46:02] Patrick: Of course. Oh yeah. So AB 32 in California, the California cap and trade, at least my background is more on carbon. So I see potential some potential there. We're not sure what the value of a carbon offset and say rangeland sequestration. Colorado would how that would compete with say, rangelands industry in California or Oregon or somewhere else. But yeah, and we also see potential for a localized carbon market, which was a discussion about six or so years ago. And potentially we could tie into the Forbes Ed initiative and kind of downtown Fort Collins areas. There's a lot of potential out there locally, but also externally specifically with carbon markets.

[46:05 - 47:16] Speaker 10: So I just talked to my parents. I think with the cap and trade that you just mentioned. So with cap and trade, the the people that benefit from the environmental side, from the cap, so to speak, are not actually involved in the actual trading itself. I mean, they just the cap, it's a public good enough so the public could never get away that that's less you out there but they're not really actively in the market itself. The market are just the people that are under the cap and trade with each other. So here we have a different story because the people that trade with each other are actually the ones that are the sellers. I don't feel feel the buyers can be the same people with, you know, the buyers are actually the ones that are gaining from. So what they face now, this public

good kind of problem. And so why would I buy if I know that she is going to buy. And I'm going to gain from her buy? So what incentive, I guess, comes back to the question earlier. So it's a different market and what incentive do I have to buy buy knowledge?

[47:16 - 48:43] Patrick: So again, that's where we come back to this quality of life question. The threats to the natural resources and thus the threats to acquire life as of before. So does helping value the ecosystem services we have help value those landscapes properly as we move forward in our population booms and doubles in 4030 years? That's one aspect. Another aspect is the compliance market with water utilities. So when we did the initial scoping water, utilities didn't seem to concern about these new EPA regulations that implemented through the state for phosphorus and nitrogen. Well, as we started re-engaging them late last year, all of a sudden they're like, actually-, we're really concerned about this now. Is this something that this we view this marketplace as a way to potentially mitigate those things. So we flipped us on our head a little bit that maybe a pre compliance regulatory market. So not regulatory but pre compliance would potentially drive this. There's also I mean, so again, it's also we're trying to make the business case to say the breweries and even the water utilities. Your water quality is dependent upon the natural resources. There's threats to those. Let's get ahead of the game. Property value these so that you can reduce your supply chain risk to do a business case scenario. Again, that's all focused on water primarily. There's a whole host of other attributes, ecosystem services. That we potentially bundle with that in the future.

[48:43 - 50:25] But it's making that case in our quality of life and then the business case with, say, breweries and water utilities. And we're not necessarily chasing after individual buyers. You know, personally, if we could get four county utilities and Greeley utilities and Loveland Water utilities to put \$0.05 or \$0.10 per water bill towards towards the Colorado Conservation Exchange, and then we can make payments to landowners. That would just be-, I would be out of this world happy if we could do something like that. But I mean, again, we haven't answered the million dollar question. How do we drive incentives? How do we drive demand? Again, if we can get people to voluntarily do this here. Anywhere, it's going to be in Fort Collins, in our opinion, or at least centered around four miles. But one-, so to your point as well, that here there's that direct connection between purchasers and sellers. One comment we had with a local stakeholder that does more energy work was one of the lessons they learned from Rex. Was that renewable energy credits, that they're just kind of amorphous credits that go to support renewable energy development somewhere, but you don't actually receive those electrons necessarily. And that one of the downfalls of the program as people look back at it was that you can be Vale in buying RECs from South Dakota is really hard for the buyers to get that feel. To see and feel the projects. That you can, some services that they are

purchasing. Which is why this particular stakeholder is really interested in what we're doing because it makes that really direct connection between buyers and sellers.

[50:31 - 50:51] Speaker 11: [inaudible] where you were talking about four different years. And if so what's your. [inaudible].

[50:55 - 52:04] Patrick: It's the first part of your question. For different ecosystem services and for different landscapes, there can be different actors and there could be, you know, generally speaking, you like to have no if we go down this kind of fund model where people put money into a fund necessarily, then the perhaps the community foundation, which has agreed to create a kind of a START fund for us already. That could be a great way to create an endowment, for example. And so they would manage that. And you still have outside advisors that know more about finance that we do they could still advise us on what's going on and what have you. Technical assistance, there's a whole host of potential entities that could provide technical assistance. And again, we're trying to engage most of them right now to say, how do we go about doing this? What would be your trend? What would be your cost? You know, NRCS is great because that's part of their mission and it's kind of no cost for us. So they're great in that respect. Monitoring and verification. Again, something like Big Thompson Watershed Farm that's already doing that kind of citizen watershed monitoring science in the big Thompson could be a great opportunity.

[52:06 - 52:57] And also implementation. People like wildlands restoration volunteers, if you're familiar with them. They do great work, bring out volunteers to do huge restoration projects. That could be a way of reducing the cost of many practices as well. Then the registry, again, there's kind of developed ecosystem service credit registries already, so that would be kind of a cost per unit to register there. But that's part of the pilot projects. What is the true cost of implementing. Reduced nutrient projects on a ranch? And then what are those true transaction costs? So when we're going through these pilot projects, we're talking David, Jessica, David. How many hours are you doing this? How many hours is your staff doing this? What did NRCS put into this. To make sure we're tracking that? So get a better idea because we truthfully don't really know all that right now. So that answer your question. That's all I got for now.

[52:59 - 53:11] Host: All right. Do you have any other questions for us. Well, we're not quite. We'll still be here. So if you have questions you want to come up, that would be great. But let's please thank the programmer [applause].

END TRANSCRIPTION