

**AACC SEED Center Webinars**

**Transcript of Webinar**

**Higher Education Collaboration for a Sustainable Community:  
2-Years, 4-Years and Marketable Credentials**

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MR. BRIAN KEATING: And without any further ado, I'm going to go ahead and turn things over to Todd Cohen. He is the director of the SEED Center.  
Todd?

TODD COHEN: Thanks, Brian. Hi, everyone. Good morning to some, good afternoon to others. Welcome to "Higher Ed Collaboration for a Sustainable Community: 2 Years, 4 Years and Marketable Green Credentials." We've got a great event planned for you today.

The SEED Center is an initiative of the American Association of Community Colleges, based in Washington, D.C. And our aim really is to build the capacity of community college in particular to educate for and build a green economy. We've got 470 community colleges that are part of our network across the country, and we do webinars, workshops, peer-to-peer mentoring, site visits. It's a great – it's a great learning network, and we urge you, if you're not a member of ours, to become one. It's all free. I would also like to say thank you to our event co-sponsor today, Building Performance Institute. BPI is a good friend of ours, and they are the nation's premier building-performance credentialing organization. They're working at a national level to really set standards to ensure quality in the home performance and weatherization workforce. They certify individuals and building analysts, heating, AC – (inaudible) – multifamily designations, they accredit contracting companies, and they serve test centers. And I think there are a number of you on the phone that are those test centers. So BPI exams are now delivered in all 50 states.

I also want to mention the National Council for Science and the Environment. They're a good – a collaborative of ours for this. NCSE is working to improve the scientific basis of environmental decision making. They're working increasingly with the two-year college to enhance environmental education. So if you've got environmental education programs, a sustainability program, I would urge you to check [ncseonline.org](http://ncseonline.org), that's [ncseonline.org](http://ncseonline.org).

All right. So for those who have followed our series, we tend to highlight community colleges with innovative sustainability education and – or clean technology workforce development programs on campus. Periodically, we come across something that's really more community-based, community colleges going beyond just training and really working with strategic partners to address broader regional sustainability challenges. And that's what we have today. It's a comprehensive and really truly integrated energy-efficiency partnership that takes place in Northern California, about 90 miles north of Sacramento, where Butte College, two-year college, is training students and contractors as building analysts. Cal State, Chico, the university there is educating students to figure out the behavior change techniques that work with homeowners that ultimately lead them toward weatherization retrofit decisions – working together, so two-year students, four-year students working together, working with the city to identify target homeowners to conduct these consultations and home modifications, and a community-based company that's there to provide a technical expertise and a project management expertise that really helps pull a complex project like this off.

So it's a really innovative model and particularly because they're attacking this from all angles. So they've sort of figured it out, in our opinion. The way the green economy is right now, it can't be just about certifying more workers. And I would suspect most of you on the phone would agree with me on that. It can't be just about training more workers. It's got to be done in tandem with other efforts to get consumers, in this case homeowners, to really better understand what efficiency options are there,

understand why and how they should be making these kinds of changes, and really the guidance there too to actually move toward upgrading homes.

And so – and then a part of this, as I mentioned, it's truly integrated, so you're going to see that as these presenters go forth. But it's – they're working day in, day out together, and it's really amazing. And you're seeing – they're going to talk about some of the results that they're seeing: more demand for skilled workers in the region, important utility savings, and ultimately I would suspect reduced greenhouse gas emissions at some point.

Now, I will say this is happening in real time, so it's not as if these folks have been doing this for years. And they can take a step back and look at sort of – show us the lessons learned. I mean, they're right in the middle of this all. And – but I've asked them to do their best to take us back and walk through why marketable credentials can be provided within that context of that real-world experience service-learning initiative. And what are the roles of each of the organizations, community colleges, city, the university and how is that – how does that trust get built?

And this is a major undertaking, but I've asked them to really – they're going to talk through how to adapt this kind of model to other regions, and even those, I think, that are perhaps not as progressive as Northern California might be. And I would say we just did a survey – SEED did a survey recently of our 470 colleges; 68 percent of them have or are planning a course or courses in energy auditing, building performance and weatherization. So there are a lot of colleges that can adapt at least components of this model, and so this conversation's really the start of that.

So let me introduce our speakers today. Andy's going to kick it off, but let me – but it's -- Linda's going to take us through the overview, Linda Herman, the administrative services manager for the city of Chico general services department. She's got 28 years of experience in municipal government. She worked with the mayor and the city sustainability task force on the development of the city's 2020 climate action plan.

Annie is the director of Training Place at Butte College, where she's responsible for the quality of the instructional design, facilitation delivery, implementation of all training programs for Butte College's contract education. She's got 23 years of industry experience for this, and she, like just about every senior leader at Butte College, is part of their college's sustainability steering committee. And for those of you who don't know about their steering committee, I mean, it is really is a very powerful, campus-wide entity.

Jon Stallman, director of Energy X-Change, he really co-developed the concept directly of managing the field mentorship program for this, provides the technical analysis for this. And he's going to walk through some of the best practices, the importance of field mentorship, with certification-driven training and some of the pitfalls and benefits of engaging communities and service learning.

And then finally, Dr. Scott McNall is a senior adviser to the president for sustainability at Cal State University, Chico, an emeritus professor of sociology; served as the university's provost for 13 years. He was also the founding director of the Institute for Sustainable Development at CSU, Chico, where he served as the executive director – (inaudible) – years. He's going to determine – he's going to talk about some of the kind of information that homeowners need to act, how they find – what they find most

valuable and identify – and how to identify some of those homeowners that are most likely to benefit from modification.

So with that, I will turn it over to Annie.

ANNIE RAFFERTY: Excellent. Thank you very much, Todd. So this is Annie Rafferty, and I first wanted to say thank you. We are honored and feel privileged to be able to share what we have learned in this project. And so we are introducing to you the Chico Energy Pioneers Team and the PG&E Innovator Pilot(s) Program. What we will walk through with you today is sharing our learning. One, Linda Herman will introduce the Chico Energy Pioneers Pilot overview. I, second, will introduce and share with you the community education program and the aspects of our workforce development training. Our third presentation will be facilitated by Jon Stallman, and he will continue on the workforce development training aspect as it relates to the mentoring and the technical applications for service learning. And then Dr. Scott McNall will walk you through the Chico State behavioral analysis and then wrap it up with sharing our recommendation for a scalable, replicable and sustainable project. So with that in mind, I'd like to introduce from our city of Chico here Linda Herman.

LINDA HERMAN: Thank you, Annie. Can you all hear me OK? (Affirmations.) OK, good. So as Todd introduced, we were in the midst of developing a climate action plan and – through the sustainability task force, and one of the things that we identified as a target in the beginning was we had a Residential Energy Conservation Ordinance on the books for years, which basically required that certain energy conservation measures be installed prior to the resale of a home, and it was primarily targeted to the older home. Recognizing the value of going into existing housing stock and retrofitting and weatherizing and doing energy-efficient measures into existing homes was very much part of our climate action plan and one of the first things we targeted, since we already had – fortunately had an ordinance on the books.

So we upgraded that ordinance to – so that was more in line with the current energy standards. And while doing that, fortunately, I had some very talented people on the Sustainability Task Force, two of which are a part of these presenters, as well as some others who came across this pilot energy – the PG&E, Pacific Gas and Electric Company's pilot innovator program. They developed the grant, and we applied for a – it's a \$400,000 grant in which we would go into 100 homes to – and it's a three-prong approach – to try to get them into compliance with – first off, with the RECO – we call it the Residential Energy Conservation Ordinance – was the first intent.

But it really grew as we got into the project. We are one of 15 pilot innovator – pilot projects, as you could see on the slide now from various communities. We are fortunate for a small community of 89,000 people to become part of this project. So we're excited. And it has really grown from what we originally intended the grant to be. And it's just developed into a very viable project for the city of Chico.

Our goal in this project was to raise awareness about residential energy consumption, to understand how to achieve lasting energy efficiency and of course, as part of our climate actions, is to come up with ways to reduce greenhouse gas emissions in the city's climate action goals. We as a city have set a goal to reduce greenhouse gas emissions by 25 percent by the year 2020, based on the 2005 base year. So in order to achieve those goals, we knew that we needed to look at the existing housing stock to do that.

So the program involved a whole-house energy assessment and an efficiency appraisal, which you would see that the BPI – and John will go into more details about that – we’re actually going in and doing a whole-house assessment first, and Annie will talk about how we got there. But – and then the energy management and behavior changes, where Scott really comes – and his expertise comes into play, because we know that there are a certain amount of energy savings that are achieved through retrofits and measures, but we also know there’s a big component of behaviors. For instance, we hear often that people will install dual-pane windows, but then feel the ability to increase their heating because they’re saving on the dual windows. So we know that behavioral has a big factor in our energy use, as well.

So as I mentioned, we – I was fortunate. We – like I said, we are a city of 89,000 people, and as most cities, we’ll see we have a (decline ?) in staff. So I was able to team up with the city of – with – (inaudible) – and the – (inaudible) – place and then CSU Chico. And again, I was fortunate, because they were already existing on our Sustainability Task Force.

And then we will talk about the workforce development and the training that went on with Annie’s component of the project. It’s actually a three-part project, like we mentioned. We have the training – because what we realized was that we didn’t – at the time, I think we had one BPI-certified person or company –

MS. RAFFERTY: Yeah, north of Sacramento.

MS. HERMAN: north of Sacramento. So we realized that there was a great opportunity to provide more expertise in this area – in that – and to provide that training for workforce development. So that’s one prong of the approach that we did.

Then the second of course is going into and actually doing the direct installations of the measures free, pretty much – well, no charge, with the public purpose money that we received from PG&E. And then the third component would be the behavioral side that that Scott’s going to talk about in more detail later.

So again, we targeted 100 single-family participants. We primarily went on a neighborhood approach. We wanted to – we had neighbors talking to neighbors, so we went to – we targeted neighbors, we – and then we also wanted to make sure that there were no income limits, because you see that typically, most weatherization programs are low-income or are income-based. We really feel there’s a need for the middle-income to be able to tap into these resources and to get the same kind of benefits from the weatherization and energy efficiency as the other groups do.

So the value to the city of Chico, and particularly me – (chuckles) – I – as we – as I mentioned, I am one staff person. This is not my only job. I am an administrative manager for a big, large – one of the largest departments in the city. So I was one person trying to pull off this huge project that has many moving pieces. So I was – so that – for that, the partnership is really valuable and I really encourage other cities to look into the possibilities of partnering with other – you know, colleges as well as the universities. Because it’s the wealth of workforce and a wealth of information and expertise and experience that really broadens the project as a whole.

So as I mentioned, it also provided access to additional resources, which I do not have, and one of which would be – (inaudible) – staff has been helping me by taking homeowner phone calls, scheduling the appointments, the things that typically, if you have the staff to do, would be done, but in my case, I don't have that staff available. So that has been a huge help for me.

So the – but the value of partnering with the city though, I think that there is some value with us, is one is, a lot of times – as some of you who are in a city organization or local government – many of these grants are only available to government entities and sometimes nonprofits. But the likelihood of access to funding is that you need a local-city partner or a government partner.

The other thing, as I mentioned early on, I was fortunate to be working with the mayor already. And so we were able to garner support of the city council and the mayor for this project. It helped in contact with the board of realtors, (the valid ?) contractors and people out in the community. So it really helps to have a government entity on board to help garner that political support.

And of course, I'm able to provide the grant administration duties – it's what I do a lot, I manage a lot of grants – (inaudible) – so I do the monthly reports, the invoicing, the things that – the city was more likely going to be more knowledgeable on that process, because we do it all the time, as far as that.

And then – and then also, we felt that with the city being involved, it established a little more trust, because as we – as we see with some people have sometimes a mistrust of a utility. So I think it helped that the city and the political officials, as well as the college and the university were all partnering in this together, so I think it helped garner the trust of the people that this wasn't a PG&E utility coming in; it was a group project.

And again, as a city, we are able to, you know, kind of front the money, so to speak, until we can get reimbursed, and a lot of nonprofits and colleges may not have that ability. We, you know, fortunately, have a little bit of capital that we can put forward to the program until we can get reimbursed, because most grants are on a reimbursement basis. So we are able to pay the vendors, so to speak, while the project's in process. And that makes it a little easier to keep the project going.

And then of course, the development of the contract: We have six contracts in this project. We have a contract with the department that you see before you now. And we have – what we've done is we have sent out a request for a proposal and paid three local contractors to do the work, the installation work. So they'll each have contracts for there. And also, more importantly, we will really make sure that they have liability insurance, that they have workers' comps insurance, that they would have performance and labor bonds. So we totally protected our own city of course, and then our partners, but more importantly, the homeowner, that we were bringing these contractors into their homes, we wanted to make sure that they were protected as well.

And then also what we wanted to do as well is we also want – and PG&E was real important to this – we wanted to somehow bridge other programs, particularly what PG&E's programs, one is the Energy Upgrade California Program. And the whole idea is that we knew what we were providing was going to be a Tier 1 level – what we call Tier 1 weatherization, that's pretty much what you see is, you know, insulating the hot-water heater, it's the typical things that are really not deep retrofits.

But we wanted to be able to tap into those resources for these homeowners, who wanted to take that next step, and we'll – and we'll go into more detail about that – who have the resources to do that, who knew that we needed to do – wanted to go and do more. And so what we did is we made sure that our contractors were, first off, certified as BPI contractors, as well as were certified as Energy Upgrade California contractors already. The idea was that we were already in the home with the contractor; we did not require that the homeowner use our contractors, but we certainly wanted to provide that resource. It was available to minimize the impact on the homeowners.

MS. : OK.

MR. : Wonderful.

MS. RAFFERTY: Excellent, well, thank you, Linda.

Well, this is Annie Rafferty, and I am the director at Duke College for the Training Place, which is our department that supports our local community with workforce development. And as Linda shared, the partnering and the trust that the city provided also gave us a central point of contact for each of our participants and partners in this program. And the grass roots efforts that I feel is important to acknowledge are the campus activities and the instrumental influence that the community created with our students, faculty, staff and administration. At Butte College, we have a steering community for sustainability with representation from each of those groups, and partnering with Chico State that has a commitment and passion to making a difference with sustainability efforts as well – supported this program.

So our acknowledgments with the development of this program – we first started with the community education recruitment effort, because we felt, based off of previous pilot programs, that we ran at the training place where community education programs run on Saturdays to try to get an understanding of where our community members were. We ran that program back in 2009 of January through the spring just to get an assessment of, what was our local community needing, and what types of questions would homeowners have as it relates to energy consumption?

So this particular program we felt was important to provide direct mail – the Chico State students worked to create a direct mail piece, and walked through the neighborhood and put door hangers on the selected homes of those individuals who had an opportunity to participate in the program. We held four evenings and one Saturday meeting at the local elementary schools for people to gather to get information about the program.

The information, then – after the homeowners signed up for the program, they were then scheduled for one of five workshops. We felt it was important to have small groups of 25 participants in each of those workshops so that we could focus on what questions the homeowners may have and prepare the homeowners for the audit and introduce those homeowners to the individual who is going to be conducting the audit in their home.

In addition, during the homeowner education, we also had the ability to provide hands-on demonstration of the audit procedure and the equipment used. So as John Stallman will walk you through in a short while about the mentoring and the application and the use of those tools, it was important for the



homeowner to see it, to understand it and then be able to be prepared for when they were going to be welcoming our team into their home.

So with that – with that being said, the last point here is, we also needed to be mindful about what release forms and surveys that we needed to gather input on being prepared prior to going into the home. Since this was a project that we hadn't done before, we needed to be mindful of liabilities and work with our business office on securing release forms for our participants doing an off-site project, and our homeowners with allowing individuals to come into their home.

And then the third part is, it was a pilot research project with our partner (and ?) utility – PG&E. So with that in mind, we needed to have a release of being able to look at their data from a private perspective and understand that that information was going to be used for research purposes only.

In understanding who our customer was, we were then able to start our workforce development training and our building performance certification with BPI. So we built our partnership with an organization called CBPCA, and established a training program for the building analysts and envelopes. The foundation of that program was at the credit of our long-term partnership with our workforce investment board and our local (region ?) with NoRTEC. Had we – had not the experience through the clean energy and our Basic HERS initiative and all the foundational programs that we had worked on here, we would have not have had the experience to be highly selective in the type of program and knowing exactly how we could be instrumental in helping that homeowner with a specific certification as it relates to the whole-home analysis.

So we started to select the programs – we started to select the participants, and gathered information together and applications were submitted to prescreen and select the candidates. We sent traditional email notifications to the participants who had entered into the Basic HERS and other energy efficiency and green-building programs that we had facilitated here at the Butte College Training Place, and including our solar group.

And last, we engaged our contractor association – which is a critical part of your local relationship there – with the trainees, and being able to connect that – that individual belongs to a contractor association that is already supporting your local community. There are newsletters, emails, and networking events that those associations hold, and so that was another partnership that was important and valuable to this local effort. So our partnership with the (Valley Contractors' Association ?) was very supportive in being able to connect to our contracting professionals that were needing this type of certification.

The actual program itself – the outcome – we had four realtors, three university graduates, eight dislocated workers looking for building contracting skills, and 15 professionals that ranged from two years to 30-plus years of experience. That consisted of licensed contractors, building inspectors, subtrades and engineers. And some of the participants within that group, they may have – they have built 2,000 homes in a much different way prior to joining this particular training.

The training program successfully trained 30 participants over 56 hours with our partner – with the Building Performance Institute – of classroom training. There was also an additional 16 hours of the Building Performance Institute's field demonstration that incorporated hands-on experience with the equipment. And we have found, with our previous experience with our participants, that we needed to



add 40 hours of Butte College technical training – which John will get into in more detail – and then, our participants and our trainees and students also had requested 24 hours of technical training that was refresher training. And that was primarily from our higher-performing students. They were interested, needing, wanting and really trying to become confident with the ability to perform and use the equipment – bridge the theory and practice from the classroom to the hands-on audit itself.

There were also – we also integrated into this program 30 to 60 hours of mentoring with the opportunity to participate in this training that was paid for by the innovator pilot program – was allowing these participants to have this investment in their certification to 30 individuals. So we had a commitment for each of them to commit to five houses – so that allowed our goal of hitting a hundred homes – to each have a core group of individuals who were certified assigned to those homes. The higher-performing students requested more homes.

And so, as a result of that, the total hours in this training program continue to grow, ranging from 166 to 196 hours per student. And when we were coordinating the hours associated with this program, there were very important details associated with the setting up of the home, assignment of the home, and making sure that we had aligned objectives for the students in our small group activities and small group exercises to allow the students to become prepared, one, for the BPI certification, and two, for the relationship that they were going to be representing both Butte College, Chico State and the city of Chico and PG&E with a local homeowner.

So the outcome of our – of our training and certification includes some really great statistics. Our building analysts' rate – we had a 90 percent pass rate on the written examination. As you can see there, the analyst examination, on the whole house homes analysis includes building analysis, concepts of building science, building science itself, building in their systems, measurement and verification of the building performance, the BPI national standards and project specification optimizing system and the professional ethics, conduct and communication.

The second examination, which was – which we were prepared because of the amount of training that we had invested with each of these individuals, we were able to also have our participants prepared for the second certification, which was called the building envelope. The building envelope, we had a 95 percent pass rate, and as you can see, the areas, the same categories but a different concentration on that particular examination.

The outcomes of the overall certification, there's a written certification and there's a hands-on demonstrated certification that BPI certifies the individual. Our first attempt -- of the 30 participants that originally entered in the program, our first attempts, we had 14 participants complete and have a – their first attempt successful.

The second attempt, which was after 24 hours, was successful with five individuals, and so we had 19 certified on analysts and 14 certified on envelope. The profile of our students earning a certification: a hundred percent of the university grads passed the test. The general contractors, building inspectors, subcontract and – subcontractors and engineers were 86 percent, and our underemployed, 40 percent; and the realtors dropped out at the third level of training and they did not complete the process.

Participant feedback: I should have been learning these concepts 27 years ago. I've built 2,000 houses a different way. This was the most difficult course. I have my master's degree in contracting experience. The whole house concepts are critical to our future in energy efficiency and measurement. Thank you, thank you, thank you.

Instructor feedback: it's the best in the state to support the trainees' success, an excellent crossover. The basic requirements of math and sciences were critical. The theory portions some of our trainees struggled with. And as Jon will speak to now, the application of the technical aspects of the workforce training were critical for the success of the training itself.

So Jon Stallman from the Energy X-Change and Chico Energy Pioneers.

JON STALLMAN: Hello, this is Jon Stallman. And a brief time check. I'm going to adjust my presentation based on how much time we have to go and leave time for questions. I'm happy to be here to explain this really exciting project from the – from the trainer's perspective out in the field.

I have over 15 years of technical training background and a master's degree in technical education. And something I really focused on in my experience of technical trainings is how much classroom versus hands-on time the students actually get to experience and how much variation of the technical expertise are actually experienced once the theoretical training has been completed.

So when we completed the theoretical training and our students took the test and various members had passed, we gathered everyone in the room and we took a census. How ready do we feel to go in these homes? And a hundred percent of the students said: We are not ready to go in the homes. We cannot do this. And the point of the discussion was to discover how prepared do they really feel to actually go into a live home, not a demonstration. And in fact, what we learned was that people needed to get out in the field and have mentorship time with a qualified individual that can help them understand the processes.

So the value of the field mentoring really comes when we identify the learner type being a contractor. They're hands-on folks. They learn by doing. They learn by getting out there and doing it, more than they do in front of a classroom – so getting out there in the homes was very key.

We noticed that the commitment of the students and the connection to the community was a really powerful tool to their confidence and their professionalism as they entered into a home. They're actually doing things for a real community, which is great if we can connect learning to actually getting things done in our community. It's just a fabulous connection.

You know, one of the biggest points that we all know as educators is the soft skill development. And when we're working with real people, we really have to practice those, and we developed these skill bases that help us. And so every house that these auditors did, four to five auditors at a time, is they would develop better and better skills each time they went into a home, both hard skills and technical skills. The biggest attribute is that these folks learned this credential. They went out and got to practice it and see all these different variations of homes, because it's like one of our students said. It's like a school bus with a school bus full of children. Not a one of them are the same and they're all very different and unique. So houses are the same way, and so are their occupants inside their houses.

So the repetition of the homes developed a proficiency and a quality of work output. So in the best practices piece, is that we developed through this program a centralized point of communication. That was the community college, that was our workforce training arena. We were able to give the homeowners one place to call one person that they knew they could connect, schedule, ask questions, and then they would field those questions over to the different members of the team that could answer those questions.

We also recognize that the proficiency and the outcomes of the students through these training programs really requires a basic skills development and assessment prior to entering. For best success, we noticed through our solar PV trainings, our water efficiency, our energy efficiency, all these other trainings through our clean energy program that Annie mentioned, we noticed that there was a basic skills need of basic math, basic written skills, basic computer skills and some soft skills in there, but certainly the math and science for building science is very important, and a major barrier to success.

We also recognize that there needs to be flexibility and awareness of when you're – when you're training professionals and schedules. We need to accommodate for those schedules. And so that was a challenge that we worked through using collaborative calendars, online calendars. And we're making the best use of trying to arrange homeowners and professional students who are in the working arena. We also recognize, it was very extensive conversations about building trust with the homeowner and how do we build trust with that homeowner. And I'm going to let Scott go into a little bit of that detail as well. But, you know, we wanted to put students in a home that had already been credentialed, has already been -- taken the test, are already certified analysts. We wanted to make sure that at least a majority of those folks and one contractor was present at a time for any nuances in a house that we might run into. We knew that we wanted one of us who was a technical education – credentialed technical education instructor to be in the home so that we could break down these ideas and make sure we're actually having the learning outcomes that we're expecting.

And we've tried to package students together that had high proficiency and relatively low proficiency so we could – we could pair those talents and they could learn from one another and how to explain things and how to learn things.

Annie mentioned too that during our workshops with the homeowners, we actually introduced the students that would be in their homes. So they had that connection. They were professionally addressed, they had good attire, we gave them shirts that were – their student trainee Butte College shirts with their – with their tags and their names on the – on the front of the shirt. And they were introduced to homeowner and got that early connection so the homeowner had time to absorb the qualifications of the individual prior to them ever coming into the house. All of these efforts developed a trust, and that trust became very key for the information piece.

Some of the things that we definitely developed out of all of this – and I'm going to move kind of quickly here – is the quality of data of the students is very important. So there needs to be some process oriented around when students are in the homes and they're with their trainer that they actually have the guidance to make sure that they're collecting the correct data. Is the data accurate? Are there any things that look strange? Are there photos that help photo document this so that when we're actually analyzing the data, we can deliver a high-quality, professional-level product? It's very important. The

homeowner wants – they’re engaging the project, yes, it’s a student project, but yes, it also needs to have quality outcomes.

Your overall process needs to have the technical software capacity. This is not something to be underestimated and certainly has provided us with great amounts of delay in our project. We had to develop our reporting system, where our Excel spreadsheets that would break the data and collect it for our research project as well as just assessing the individual home.

And then in the homes and while the homeowners are taking that data to make sure that they’re getting it, we want to have process guides, learning guides that help that student understand what it is, the data that they’re collecting, and not just as a number, but as a – what do I do with that number? Where do I go next? What onion piece do I peel back next to find the real root cause that’s going on in this house? And so students can jump to conclusions very quickly. We want to make sure we slow them down and really analyze what it is they’re thinking about.

So all right – and I think that pretty much wraps it up. I want to leave enough time for Scott to explain his exciting piece. It’s kind of wrapping up all of this data and all this activity into the behavioral component. So here is Dr. Scott McNall.

SCOTT MCNALL: Good morning. I know you all have been listening in for a while now. And you’re anxious to ask questions, so I too will trim down my presentation a bit.

Just a couple of things, one about the participant demographics: One of the things we wanted to do – and in your neighborhood, you might want to think about doing the same thing – we identified homes that had been built in the 1960s, late 1960s and early 1970s, because we assumed that there would be opportunity for improvement of the homes’ envelope.

Another thing we also noted from simply driving around the neighborhoods is that there was considerable variance in terms of what people had done to their home; in other words, some had installed HBA systems, other people simply had swamp coolers. So a number of modifications had been made to the homes.

We assumed, because there were over 1,000 potential homes that could have been involved in the project, that it would be easy to get people to sign up. And actually, that was kind of a problem. And it comes back to the issue of trust. It was important that the city of Chico that Butte College and Chico State were involved together, because sometimes even if the local utility company is helping, not everybody has positive feelings about the utility company. And so even though we were providing people with substantial resources – we told everybody that you are a participant, you’ll get up to \$850 worth of retrofits, you’ll get a detailed analysis of how your home performs – we still needed to go back into the neighborhood several times in order to convince people that this was a good thing to do.

And then real quickly, for those people who did participate – and John did not have time to tell you – they valued this contact and they valued the information that they got.

So our part of the program was kind of tricky. It was basically, how are you going to get people to change their behavior? Is it going to be on the basis of detailed knowledge of how their home functions? The reality is that nobody wants to waste money on energy.

The other thing we found out from our initial interviews with the homeowners is virtually everybody was doing what they thought was the right thing to reduce their energy bill. We found that most of these had taken at least 11 separate actions to reduce their energy consumption.

One of the other things we found out is that variation was actually a key finding; that is, two people living side by side in almost exactly the same house would have highly different energy bills. And some of that was due to behavior and some of it was due to the building envelope.

So one of the things that John has found out as he's drilled down is that every single house that he has gone into with his team, they have found things that could be done to modify the building envelope that in some cases will yield substantial savings.

And one of the ways in which to make a program like this valuable to the community is to make it clear to people that even though they may have done some of the very best things to make their – (audio break) – and comfortable, there is still great opportunity for energy savings.

Some of the initial barriers to change that we found – John already noted one of them, that is trust. Another barrier to change – and it's something that everybody needs to think about, because it's still one we're running up against – it isn't necessarily a person's financial status, it's rather time, time for engagement with the visiting team, time for engagement with the person's own home, time to find out how to do things.

So the project has proved extremely valuable in terms of the ways in – finding out the ways in which people use the information, the ways in which people are using the information they get from the utility company. And probably the findings would argue very strongly for either prescriptive or proscriptive audits for homes in any community, because people simply don't know how their home is functioning. To make a program like this scalable, replicable and sustainable, as we've already noted, you need to have a team that's a broad-based team drawing on the skills of everyone in the community, in part because each community is unique. The partnership is essential. You'll want to pursue that.

Another thing in terms of replicability (sic) that we found – and I'm sure John will continue to work on this – is basically there is a – there's a series of findings about each home; in other words, there are about five or six major envelope problems that he has identified with virtually every home in the sample. And if we could direct folks to just focusing on and figuring out how to solve those, that would make these programs much more sufficient. And the sustainability will of course come from the development of a partnership and from the savings that can be generated by each and every homeowner through their involvement in such a program.

The end.

MR. : All right, great, I think we're going to stop here for a minute?

MR. : Yeah so that – oh, hey thanks.

Well, let me – let me first say thanks to everyone, the speakers. I mean, it's incredible, the model, if we could scale this to all 400 of our college members, seriously would be unbelievable. But thank you for your time, first of all.

For the folks listening, you can post questions as you have already. We will get to them, as many as we can in the next 10 minutes.

Let me also say the speakers are willing to stick around for a few minutes afterward, and they – and – there's the contact information – but the speakers are willing to stick around for a few minutes after this is over to chat with you online here. So if we don't get to your question or something comes up and you want to stick around, they'll do some rapid-fire chat.

You see the contact information there. Let me also make reference to one thing. It's a video link, and this will be available, we'll send this out to you, to email. So this is a great video available to see how this works and students actually in the homes working. It's a really neat thing to see. So I'd urge to hit that after this.

All right, well, let me open up and – to the presenters, I will say this, just make your answers as succinct as possible. Let me start here though, the sustainability of the program itself. Can you all address that – do you see – what do you need for this to continue? How realistic is it to keep it at this level?

MR. MCNALL: Well, John can speak to that. But real quickly, you need to figure out a business model, because the time is involved in a person doing one of these whole home analyses can be up to five to six hours. And the homeowner needs to be able to understand what the benefits of that audit would be. And the savings have to be achieved either through reduction in the energy bill or they have to be achieved through some other kind of guaranteed program that helps a person pay for all of these retrofits.

But, Jon?

MR. STALLMAN: Well, I mean, that's well said, Scott. And I think there's two components here. And mainly, we need to help our contracting forces in your regional area understand building science and what it means and how it applies. Those folks, whether they go a full route of BPI or they have a workforce training element that helps them understand – their workers understand these concepts so that at least one person in the company holds the credential and the workers actually understand what it is that's happening, that is very key.

As far as homeowners go, homeowners value quality information. They want – they want information prioritized to them that shows energy benefit, that's comfort oriented, health and safety. And they want to know how that fits into the construction sequence. They don't have the technical background to be able to say, what do I do first and what do I do last. They need to have all that spelled out for them.

And so a neutral party that can come in and provide them the assessment, the information, the guidance of who and how, what to do and go to, really is key. An elaborate report is excellent – one with photos



preferably. And largely that has some level of information in it that helps educate them. I think one thing that we have found in comparing a large number of different reporting methods for BPI ideas is that some of the reports lack the educational content that helps the homeowner be able to understand it.

We hit primary characteristics with the homeowners, and this'll ping with you educators out there, is the kinesthetic learning component of having the homeowner involved while you're in the home doing the testing, the auditory component of describing it to the, helping them understand verbally what's going on. And then the visual component being the pictures, the use of an iPad to show the pictures on site, the use of a report to show pictures and graphs describing what the data actually looks like broken down. Those things are really important attributes.

So you know, we're trying to figure out how to apply this on a broader scope with the business model. And anyone who's interesting in trying to propagate this kind of thing in their community, we can certainly have conversations about that. We would love to do another 200 homes or more. It's hugely beneficial.

MS. RAFFERTY: Yeah. And this is Annie. I would have to say, to answer your question about sustainability – tagging onto Scott and Jon's message here – is that here at the college, from a workforce development perspective, we have the experience, we have the understanding of the profile now as to what does the learner need. And how can we focus a concentrated effort on hands-on technical skills for the individual.

And so we have the programs in place. It's a sustainable program. And if we had another project coming up, we would replicate what we are doing here and we have a lot of experience to be able to share with others on how to concentrate the amount of time on best preparing the students for the particular audit itself.

MR. : Great, great. So let me ask – so the – real quick, can you say a little bit about the relationship between these organizations to your – the Butte, CSU, the city and, Jon, your organization, before this project? I mean, was it – was it something that was already being cultivated? Did you come together for this? I mean, just say – I mean, real quick, but what would you say was the level of interaction before?

MS. HERMAN: This is Linda Herman. As I mentioned earlier, two of – Jon – both Jon and Scott McNall are on – was on the City Sustainability taskforce at the time we were discussing this project. So definitely, there was a connection there. Jon was – at the time was working for Butte College and, as he mentioned, was doing the clean energy project and the HERS training. So it just kind of cultivated together.

And at the time also – we also had an individual on our taskforce who was with the Great Valley Center who was – had great experience with doing – teaching these pilot programs and grants. And she actually helped us write – that was Lindsay Buckley who's now with the Institute for Local Government in Sacramento. So I was fortunate that I had people – that's where the connection came, was through the sustainability taskforce, if that helps.



MR. : Great, great, great. Annie, to get back to you, somebody wants to know what you attribute the different pass rates among the categories of students that you put through the program. Can you speak a little to that?

MS. RAFFERTY: So the students needed additional training and support with math and sciences and also being able to be prepared for a written test on their level and knowledge. And most of these individuals – these are professional, experienced contractors, building inspectors, individuals who’ve been working in the field for a really long time. The last time they would have ever taken an examination, let alone be on a computer or another medium, was a really long time ago.

And so their hands-on experience and written preparation for that test and being able to link the theory and practice to the heavy technical analysis on that whole home inspection and audit, that’s where some of the gap was. And so that’s – that was the reason why we added additional hours inside the homes and being able to use the equipment and write the reports and being able to – well, here’s the other thing.

They’re independent contractors. They’re, you know, a one or two guy show sometimes. So they don’t really have to tell anybody what they’re doing or what they’re thinking. The requirement in this process is heavy on the soft skills of translating what are the thoughts and what are the technical aspects in that report and how do they translate that into layman’s terms for the individual homeowner to understand so that it’s meaningful for them and it’s not – and they’re not fearful.

MR. : And that is a learned skill, if you ask me.

MR. : Yeah. This is great. Well, I’ve got to end it there. So, Linda, Annie, Jon, Scott, thank you so much for your time. This was a great model. I will say, you know, as you go through this and if, Jon, you start to think about writing some of the results up and, Scott, you as well, on the behavior side – you know, some of the findings or learnings from that – I think – you know, I – we would be very interested in disseminating that through our vehicle here so that other folks can try to replicate that. So you know, as you come to those results, those findings, please do share.

Thanks again for that – again, for the folk on the call, you didn’t get your question answered, we’re going to turn this over now to a chat and just sort of rapid fire just throw your questions in there and the speakers are – I think are willing to stick around for a few minutes. So you know, thank again and thanks to all.

I also want to say last thing, next webinar is April 10th. Mark your calendars. A topic that I think most of you are challenged with trying to do, sustainability across the workforce curriculum – how do you do it and what does it look like when it works? Keep your eyes out on our website for that. Thanks all.

MS. : Thank you.

MS. : Great. Thank you very much.

(END)