

Final Technical Report (FTR)

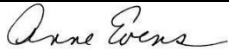
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1. Acknowledgement

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2. Executive Summary

Many studies have shown that photovoltaic (PV) installations on homes significantly increase home values.¹ The added value may be the deciding factor for a homeowner to invest in PV, but that benefit is often lost when real estate agents and appraisers are unable to fairly value the installation and communicate that worth throughout the chain of stakeholders involved in the home buying and selling process.

Clear identification of the positive contributory value of solar energy installations in the real estate market is crucial to the solar industry's growth and success because it can demonstrate to the buyer and other stakeholders that improvements can "pay for themselves," partially or fully, through an incremental increase in the home's resale value. As the market more consistently recognizes the contributory value of solar energy assets, homeowners will become more confident in solar PV technology as a home investment. This will create a cycle in which owners and builders invest in residential solar systems because they believe that they can recapture the value of their improvements at the time of sale.

Key players such as real estate professionals, appraisers, and appraiser regulators need the tools and information to effectively advise the appropriate parties in real estate transactions that involve PV systems. As part of this project, Elevate Energy (Elevate) developed three separate (but related) solar training courses for real estate agents, appraisers, and appraiser regulatory officials.

To start, the Elevate team researched existing training resources to verify the need for solar valuation training in the real estate industry and found there were very few options for real estate agents and appraisers to learn this skill. To efficiently and effectively reach real estate professionals, Elevate and partners developed three training programs on residential PV systems and their impact on home valuation: an online course for real estate professionals, an in-person training course for appraisers, and an in-person course for appraiser regulators.

The online solar training course for real estate professionals, "[Selling the Sun](#)," was launched on July 17, 2017. It was developed as an online course that has the benefit of

¹ Studies include:

- Adomatis, Sandra, and Hoen, Ben. *Appraising into the Sun: Six-State Solar Home Paired-Sales Analysis*. LBNL, 2015. Web. 21 May 2019. <http://eta-publications.lbl.gov/sites/default/files/lbnl-1002778.pdf>
- Desmarais, Lisa K., *The Impact of Photovoltaic Systems on Market Value and Marketability*. Colorado Energy Office, 2013. Web. 21 May 2019. <https://www.colorado.gov/pacific/energyoffice/atom/14956>
- Hoen, Ben, and Wiser, Ryan. *Selling into the Sun: Price Premium Analysis of a Multi-State Dataset of Solar Homes*. LBNL, 2015. Web. 21 May 2019. <http://eta-publications.lbl.gov/sites/default/files/lbnl-6942e.pdf>

being self-paced, interactive, and low cost (on average \$39), and seamlessly provides Continuing Education (CE) credits for students in over 20 states. The online class was offered on several online educational platforms, including the Center for REALTOR® Development (CRD) and Elevate Energy’s portal. Since its launch, over 70 students have successfully completed the online class. An additional 251 students completed a live version of the class over the grant period. For context, there are approximately 2 million residential real estate professionals in the United States.

The [training course for appraisers](#) was first offered in October 2017. The class was designed as a live offering with CE credits. Over the grant period, the appraiser class has been delivered in 15 states through a network of five instructors. All 752 attendees have received CE credits. For context, there are approximately 80,500 real estate appraisers in the United States.

The third audience was appraiser regulatory officials. The team held one live, in-person training and one [free webinar](#), reaching a total of 85 appraiser regulators and their staff. Each state has an office for regulating appraisers.

Addressing these professional segments within the real estate industry simultaneously will increase the likelihood of fair valuation of residential solar installations, leading to eventual market transformation. It is at that point, when the market fully realizes the value of solar and more households install these systems, that we will see the long-term environmental benefits of solar: a dramatic increase in the use of a clean energy source and a reduction in the use of finite resources to produce electricity.

3. Background

There are very few existing publications about valuing solar in the real estate market. This project leveraged the following publications as the basis upon which to build the training for real estate professionals and appraisers.

Table 1. List of Existing Publications

Reference	Description
Appraising Into the Sun: Six-State Solar Home Paired-Sales Analysis ; Authors: Sandra Adomatis, Ben Hoen; 2015	This study from Lawrence Berkeley National Laboratory shows that home buyers across the country have been willing to pay a premium for a home with a homeowner-owned solar array.
Here Comes the Sun: The Value of Residential Solar ; Author: Harold Hunt; 2016	The Real Estate Center at Texas A&M University examines the solar PV sector and recent research involved in accurately estimating any market premium for the systems at resale.
The Impact of Photovoltaic Systems on Market Value and Marketability ; Author: Lisa K. Desmarais; 2013	The Colorado Energy Office and the Colorado Chapter of the Appraisal Institute support the conclusions that PV systems typically increase market value and nearly always decrease the time a home is on the market.
Selling Into the Sun: Price Premium Analysis of a Multi-State Dataset of Solar Homes ; Authors: Ben Hoen, Sandra Adomatis, Thomas Jackson, Joshua Graff-Zivin, Mark A Thayer, Geoffrey T Klise, Ryan H Wiser; 2015	This study from Berkeley National Laboratory quantifies the value of rooftop PV on homes that sold across eight states and 15 years.

4. Project Objectives

Studies have shown that residential host-owned (i.e., owned by the homeowner and not a third party) solar installations increase home values significantly (\$3 to \$4 per watt²), and that solar homes that have been accurately marketed sell at a higher price and spend fewer days on the market.

However, the added value of a solar home is often lost when real estate agents and appraisers are unable to fairly price the solar installation and communicate that worth throughout the chain of stakeholders involved in the home buying and selling processes. According to the National Association of REALTORS® (NAR) 2018 REALTORS® and Sustainability Report,³ most agents don't realize that solar installations have the potential to increase the home value. In fact, 43% of survey respondents reported that residential solar decreased a home's value while 19% were unsure of the effect. As demonstrated by these responses, many real estate agents have not been trained to recognize the benefits of solar homes and their inherent value. It is interesting to note that the survey did not distinguish between host-owned and third-party-owned rooftop solar, which may have different premiums.

Educating real estate professionals on the value of solar is crucial for the residential solar industry's growth and success. According to NAR, there were 5.5 million home sales in the United States in 2017. NAR found that in that year, 87% of home buyers used a real estate agent as did 89% of home sellers.⁴ Over two million real estate agents in the United States are interacting with home buyers and sellers from all types of neighborhoods and income levels. Real estate agents and appraisers well-versed in residential PV systems and their benefits will be able to convey the fair value of these homes in the real estate market.

The overall goal of this project was to fill the education gap and enable real estate professionals to fairly value homes with solar PV systems. To reach this goal, Elevate developed low-cost online and live CE classes. The resulting confidence from homeowners as the market more consistently recognizes the contributory value of solar energy assets will create a cycle in which owners and builders invest in residential solar systems because they believe that they can recapture the value of their improvements at the time of sale. Buyers and other stakeholders will recognize that solar improvements can "pay for themselves," partially or fully, through an incremental increase in the home's resale value.

² Adomatis, Sandra and Hoen, Ben. "An Analysis of Solar Home Paired Sales across Six States." The Appraisal Journal, Volume LXXXIV, Number 1, 2016, Page 27-42. Web. 22 May 2019.

<https://emp.lbl.gov/publications/analysis-solar-home-paired-sales>

³ 2018 REALTORS® and Sustainability Report

⁴ <https://www.nar.realtor/research-and-statistics/research-reports/highlights-from-the-profile-of-home-buyers-and-sellers>

5. Project Results and Discussion

BUDGET PERIOD 1

Task 1.0 Identify Information Gaps to Inform Training Needs

Subtask 1.1 Project Kick-off

Subtask Summary: Within the first month from project start, Elevate will conduct a project kick-off meeting with DOE representatives and our project partners. The kick-off meeting will be held at Elevate's office with online video chat option for remote stakeholders. The meeting will be an opportunity for the team to review the overall project objectives and approach, timeline, roles and responsibilities. The team will also review the initial list of project stakeholders and identify any additional stakeholders that should be involved in the project. The list of stakeholders will include subject matter experts and other professionals that will support the review process during course design. As part of this initial stage, Elevate will prepare a course proposal abstract that may be used for submittal to the Appraisal Institute (AI) and other organizations identified during this subtask.

Milestone 1.1.1 Kick-off meeting minutes; list of stakeholders submitted to DOE; SMEs and focus group participants recruited.

Summary of Progress: The project team kicked off with project partners over three different meetings to accommodate schedules (May 6, May 23, and May 31, 2016). Upon the initial kickoff, Elevate recruited and secured subject matter experts (SMEs) and focus group participants. Elevate recruited six SMEs and six focus group participants per each group of professionals. This milestone was completed.

Milestone 1.1.2 Course proposal submitted to AI. If interested, Elevate will submit to DOE a roadmap for outreach and communication of the course to AI's membership.

Summary of Progress: In May 2016, Elevate continued the conversation with AI that started before Elevate submitted the STEP proposal on their possible involvement in the appraiser class. In June 2016, AI's Chief Executive Officer officially declined to host the online class, stating that AI did not have the capacity to take on a new project at that time. The Elevate team began actively exploring alternatives for building and hosting the appraiser class through another organization which would also be able to provide the continuing education services necessary to comply with the project objectives. In January 2017, project partner Sandra Adomatis found a solution working with the AI local chapters through the Home Grown program. Through this program, the class was offered live by the local chapters as opposed to online as originally planned. The Elevate team provided the training materials to AI local chapters for free, while the chapters covered instructor fees and any fees associated with obtaining CE credits. AI

helped promote the training to its chapters. This milestone was met through the live offering of the appraiser class.

Subtask 1.2 Identify Critical Characteristics and Data Gaps for PV in MLS fields

Subtask Summary: Elevate will convene a multidisciplinary team of professionals to identify key information on solar installations that should be considered in determining contributory value to homes. The team will include 10 core and 20 affiliate professionals, 30% of which are representatives from the real estate industry (real estate agents, appraisers, and appraiser regulatory officials with solar expertise), and 70% are representatives of the solar industry (solar contractors, solar energy associations, and energy efficiency organizations.) The team will be provided with existing resources, including the Green MLS fields established by the Real Estate Standards Organization (RESO), and the inputs to PV Value. Over the subtask period, the team will be asked to agree by consensus to the critical data points on residential PV installations that should ultimately be made easily available at the time of sale and clearly understood by both real estate agents and appraisers.

Milestone 1.2.1 Submit Memo including a list of information gaps in MLS fields and workplan to address gaps to DOE.

Summary of Progress: The work under this subtask was performed under a different grant. The work performed was not billed under this grant as it was funded by other sources. The findings represented an important step in the process to inform course content. From October 2015 to March 2016, Elevate led a group of stakeholders in determining what standardized data fields for PV systems should be added to a Multiple Listing Service (MLS) to allow better information about these systems prior to and during the transaction process. This initiative was sponsored by Lawrence Berkeley National Laboratory (LBNL). The workgroup identified gaps in the Real Estate Standards Organization (RESO) Data Dictionary and recommended new fields and enumerations that would provide further detail of PV systems in a residential property. On April 19, 2016, RESO approved the addition of new fields to the Data Dictionary v1.5. This new version of the Data Dictionary, released on June 21, 2016, includes most of the recommendations resulting from this project. Elevate submitted a memo to DOE summarizing the background on this initiative, including a list of information gaps in MLS data fields, recommended changes in existing fields and new fields, and the steps forward to address these gaps. The gaps were addressed as described in Milestone 1.3.2. This milestone was completed.

Subtask 1.3 Recommend Additional MLS Fields to RESO, Council of MLSs (CMLS)

Subtask Summary: Based upon the identified critical data elements from 1.2, we will create a model data list that will be made publicly available as a deliverable. Additionally, we will compare existing RESO Green MLS standards' coverage of PV systems with our full list. Any significant gaps in the current standards will be shared with RESO, CMLS, and other key stakeholders to help promote adoption of more

complete field listings. RESO sets standards for MLS fields and publishes them in a data dictionary. CMLS has an advocacy role, encouraging members (over 115) to support the proposed new solar fields during a public comment period. Individual MLSs have the authority to modify their data fields, typically based on the data dictionary published by RESO.

Milestone 1.3.1 Submit memo to RESO and CMLS with recommended model data list to complement current MLS fields.

Summary of Progress: The work under this subtask was performed under a different grant. The work performed was not billed under this grant as it was funded by other sources. The findings represent an important step in the process to inform course content. Elevate participated in a working group comprised of solar and real estate professional experts to develop the list of recommended fields. The workgroup identified gaps in the RESO Data Dictionary and recommended new fields and enumerations that would provide further detail of PV systems in a residential property. The memo submitted under Milestone 1.2.1 included the list of recommended fields which were submitted to RESO in March 2016. This milestone was completed.

Milestone 1.3.2 Report on RESO and CMLS approval, including potential timeline provided by the groups for approval.

Summary of Progress: On April 19, 2016 at their spring conference, RESO approved the addition of the new fields to their upcoming new version of the Data Dictionary v1.5, which was released on June 21, 2016. All the recommendations provided through the Data Dictionary Working Group were approved by the RESO Board of Directors and adopted into [Data Dictionary](#) version 1.5, released in July 2016. Recommendations consisted of new fields in the MLS specific to solar photovoltaics and other renewable energy installations. These included fields related to the physical characteristics of a solar PV installation and its components, capacity, annual energy production, and ownership and financing status of these systems. Table 2 summarizes the new fields and enumerations included in the new version of the Data Dictionary. This milestone was completed.

Table 2. New Solar-Specific Fields Added in the Data Dictionary v1.5

Third-Party Verification	Green Search/Mktg	Detailed Fields	Additional Enumerations
GreenBuildingVerificationType GreenVerification[Type]Body GreenVerification[Type]Year GreenVerification[Type]Version GreenVerification[Type]Rating GreenVerification[Type]Metric GreenVerification[Type]URL GreenVerification[Type]Status GreenVerification[Type]Source	GreenEnergy Generation – Solar, Wind	CurrentFinancing – PACE, Power Purchase Agreement, Leased Renewables Electric - Energy Storage Device, Solar PV Seller Owned, Solar PV Third-Party Owned, Wind Turbine Seller Owned, Wind Turbine Third-Party Owned, Pre-Wired for Renewables, Ready For Renewables, Net Meter ElectricOnPropertyYN PowerProductionType – Photovoltaics, Wind PowerProduction[Type] Size PowerProduction[Type] Annual PowerProduction[Type] AnnualStatus – Actual, Estimated, Partially Estimated PowerProduction[Type] Year Installed	Appliances – Solar Water Heater Pool Features – Solar Pump Spa Features – Solar Pump

Subtask 1.4 Review Existing Training Resources

Subtask Summary: Our project team has a strong knowledge of existing training material on PV for the real estate industry. The team includes the coordinator of the National Association of REALTORS®’ Green REsource Council, the author of the leading solar valuation tool, PV Value, and a leading trainer of appraisers in Green Real Estate. The project team will conduct a search for other reference and training materials already available to ensure that we are not duplicating other efforts and to collect lessons learned from other efforts.

Milestone 1.4.1 Submit summary document detailing results of research of existing training to DOE.

Summary of Progress: The Elevate team researched existing training resources to verify the need for solar training in the real estate industry (both for appraisers and real estate agents). The research consisted of a combination of online searches and communication with partners and subject matter experts. Approximately 10 contacts and their networks provided feedback between April and May 2016. Based on our findings, there was a demonstrable need for a valuation class offering for real estate

agents. While some courses did touch on the existence of solar, they did not cover how to properly value a home in the real estate market; additionally, the solar information was part of a larger “green” class instead of a standalone class on solar. On the appraiser side, we found only one class that thoroughly covered the issue of valuation. However, that class was 14 hours long and cost \$425. As this class was in-person only and required a large time and financial commitment, only a limited number of people would have access to this class in any given year. Research showed that the number of attendees is highly dependent on delivery method and cost; a range of attendees of 10 to 50 per class is typical for live presentations, while online classes typically can reach 350 to 700 attendees per year. The Green Day 1 class offered by NAR, for example, is part of a two-day class offered both live and online at a cost of \$149. This class was taken by 560 students from January through September 2016. This milestone was completed.

Subtask 1.5 Identify Topic Areas for Trainings

Subtask Summary: Based on the list of critical data elements from Subtask 1.2 and training gaps identified in Subtask 1.4, we will identify key training areas for real estate agents and residential appraisers that will need to be included in the curricula to be designed. Much of the curricula development will focus on collection and interpretation of the data elements needed to calculate and communicate the value of a PV system. While we anticipate that the needs for all three groups of professionals will be similar, at this stage we will prioritize the list of data elements for each profession.

Milestone 1.5.1 Submit outline of key topic areas to include in training curricula

Summary of Progress: Based on the gaps identified in Subtask 1.2 and 1.4, the Elevate team identified key areas for training for agents and appraisers and developed initial outlines. The outline for regulatory officials was based on the appraiser’s class outline. This milestone was completed.

Task 2.0 Early Promotion of Trainings

Subtask 2.1 Establishing the Outreach Framework

Subtask Summary: Elevate and its partners will disseminate the training courses through their existing networks to reach the intended audience. This will include attending and presenting on the materials at relevant conferences such as those held by AI, NAR, and AARO.

Milestone 2.1.1 AI will be contacted as part of Task 1 regarding their interest in Elevate’s online appraiser training. If interested, a roadmap for promoting the course to their membership will be devised and shared with DOE.

Summary of Progress: Since AI did not join the project team, this milestone’s timeline shifted significantly into Q2 and Q3 before a path to AI’s involvement was clearly

defined. While the conversations with AI were occurring, the Elevate team considered several options to offer the appraiser class as a CE and non-CE option via other channels as a live or online offering. Starting in March 2017, Elevate worked with AI local chapters to offer the class as a live CE offering through the Home Grown program. This milestone was completed.

Milestone 2.1.2 Elevate will submit session proposals to present at three major industry annual conferences (AARO, NAR, AI.)

Summary of Progress: Before the classes launched, Elevate and partners worked on promoting the class and developed communications materials. Elevate and partners presented at the conference events listed below.

- **2016 NAR Conference and Expo:** Elevate moderated a 90-minute session titled “Valuing Solar Installations for Real Estate Resale” on November 4, 2016 in Orlando, FL. Approximately 75 professionals attended this session. The session included panelists Pamela Brookstein (Elevate Energy), Craig Foley (Sustainable Real Estate Consulting), Sandra Adomatis (Adomatis Appraisal), Eileen Oldroyd (real estate agent in California), and Chet McGensy (Solar Energy Industry Association).
- **2016 Appraisal Institute Annual Conference:** On July 26, 2016, in Charlotte, NC, approximately 35 professionals attended the session titled “Appraising the Sun with the PV Value® Tool”
- **2016 Southeastern Building Conference:** Sandra Adomatis secured presentation slots to promote the solar class in her conference sessions.
- **2016 Association of Appraiser Regulatory Officials Conference:** On October 23, 2016, in Washington D.C., approximately 165 professionals attended this session. Sandra Adomatis offered a live version of the appraiser regulator training on valuing solar.

In addition to these conferences, Elevate and partners conducted other live events in Cape Cod resulting in 135 real estate professionals receiving CE credits.

Additional promotional activities include articles and newsletters:

- The real estate professionals’ class was highlighted in the June 2016 issue of NAR’s Green REsource Council’s monthly online newsletter. The article was entitled “Evaluating Solar, Closing the Knowledge Gap.” The newsletter was sent to approximately 4,000 REALTORS® with NAR’s Green Designation.
- The article titled “Here Comes the Sun”, published by the Real Estate Center of Texas A&M University and authored by the research economist Harold D. Hunt in November 2016, mentioned the Elevate/SunShot project in the context of much-needed training in the real estate industry. This publication was part of Tierra Grande, a quarterly magazine that goes out to 160,000 professionals. This milestone was completed.

Milestone 2.1.3 The Elevate team will develop a strategic outreach plan for real estate agents early on in the project to accelerate the number of real estate agents effectively targeted and reached.

Summary of Progress: With guidance from Elevate, partner Learning Library, Inc. (LLI) developed a strategic outreach plan for real estate agents. The strategic outreach plan defined strategies to help achieve enrollment goals. Examples of these strategies included discounts, benefits, and bundling of classes. For both real estate and appraiser classes, Elevate developed a features sheet and promo videos with testimonials to encourage professionals to learn about the topic.

Early promotion of the appraiser class was done through the team's network. Elevate leveraged its national relationships with the real estate industry to promote the class, including the members of a committee made of leading organizations committed to high efficiency homes. These include NAR, AI, U.S. Green Building Council, National Association of Home Builders, Council of MLS, Build It Green, and others. Elevate's key partner Sandra Adomatis promoted the class through her national network. This milestone was completed.

Task 3.0 Design Training Courses

Subtask 3.1 Design Training Curricula

Subtask Summary: Using topics identified in Subtask 1.5, we will design a detailed curriculum for each target audience group (real estate agents, appraisers and appraiser regulatory officials.) Curricula will include specific learning objectives for each topic along with the relevant details and supporting examples based on real world situations. For each topic, we will develop quiz questions to help assess the students' understanding of the topic and meet the requirements for continuing education credit. The curricula for real estate agents and for appraisers will be designed to be readily transferable to the online learning management system and to ensure they meet the requirements for earning continuing education credits, where applicable, for licensure in the majority of states.

Milestone 3.1.1 Submit detailed training curricula and associated course metrics and evaluation measures for each course to DOE.

Summary of Progress: The Elevate team designed the curriculum and developed the training presentation for each target audience. The components of each curriculum included:

- Class description
- Learning objectives for each module
- Extended outline

Additional components of the curriculum included the quiz questions, course metrics, and evaluation measures. Course metrics and evaluation measures were developed based on existing standards for distant education issued by the Association of Real

Estate License Law Officials (ARELLO) and the International Distance Education Certification Center (IDECC).

- **Quiz questions:** The standards require 10 to 12 questions per hour of e-learning. A question bank of three times as many questions is required to offer the ability to rotate questions. Given this standard, Elevate developed a question bank of 90 to 108 questions per class.
- **Course metrics and evaluation measures:** Elevate assembled the course metrics and evaluation measures that would be used to measure class success and identify areas for improvement.

This milestone was completed.

Subtask 3.2 Subject Matter Expert (SME) Review of Each Curriculum

Subtask Summary: A draft of each curriculum will be shared with two groups of up to five real estate industry professionals each (one group of real estate agents and one group of appraisers) representing different markets, who are familiar with the marketing and valuation of homes with PV systems. These SMEs will review and provide feedback on each curriculum. SMEs will be asked to review the draft for accuracy, completeness, engagement, appropriateness for the intended audience, and understanding of content. They will be provided with a formal review document that requests feedback on these metrics, asks specific questions, and provides opportunities to provide additional comments. Corrections or additions based on the reviewer feedback will be incorporated.

Milestone 3.2.1 Submit to DOE the template review document that reviewers will use to provide feedback on each curriculum.

Summary of Progress: Elevate developed a template review document for SMEs to provide their feedback on each curriculum. This milestone was completed.

Milestone 3.2.2 Submit a summary of findings and updates from SME reviews to DOE.

Summary of Progress: A draft of each curriculum was shared with two groups of five real estate industry professionals each (one group of real estate professionals and one group of appraisers) representing different geographic markets who were familiar with the marketing and valuation of homes with PV systems.

The SME review process: Elevate sent the curricula to the SMEs along with a link to an online questionnaire approximately one week prior to the meeting. SMEs reviewed the curriculum and responded to the questionnaire on their own. SMEs provided feedback on how the content in the curriculum aligns with the learning objectives, strengths and weaknesses, and overall comments. Finally, the SMEs and Elevate discussed the feedback as a group on a conference call.

After these meetings, Elevate incorporated the feedback from SMEs into the class manuscript, a detailed narrative that included the entire class content.

It was during the creation of the classes that it became evident that SMEs, because they are experts in their field, often want to include all of the information that they know about a subject, instead of paring down that information into the basics that a student new to solar has the capacity to learn in a three-hour class. An important lesson learned is that it is always important to keep the student in mind and what their potential motivation is for taking a class on solar. For instance, in a real estate agent's daily work, key considerations are to avoid potential liability, to stand out in a crowded field of professionals, and to maximize the sale price as much as possible. In classes covering information that is new and potentially confusing, it is crucial to limit the information to content that is absolutely essential to the student's day-to-day experience. For this reason, the input on the real estate agent class manuscript provided by Amanda Stinton from NAR's Green REsource Council proved to be the most valuable. At every turn, she reminded the team to keep the content simple and focused on the agent learning experience.

This milestone was completed.

Subtask 3.3 Focus Group Review of Each Curriculum

Subtask Summary: Once feedback from subject matter experts has been incorporated, each curriculum will be reviewed with focus groups of five to ten real estate professionals each without extensive familiarity with PV representing diverse geographies, including areas with and without a high percentage of solar system installations. The focus group leader will prompt the participants for feedback on the clarity, level of engagement or interest, and understanding of the material. Corrections, additions, or clarifications based on the feedback will be incorporated.

Milestone 3.3.1 Submit summary of findings and updates from focus group reviews to DOE.

Summary of Progress: The two class manuscripts were reviewed with two separate focus groups (one for each audience). Focus groups consisted of groups of six professionals without extensive familiarity with PV representing diverse geographies, including areas with and without a high percentage of solar system installations.

For the focus group review, Elevate provided the participants with the class manuscript one week ahead of the focus group meeting. The meeting consisted of a facilitated session where the focus group leader prompted feedback on general and specific content, clarity, level of interest, and understanding of the material. These reviews helped the team shape the class with relevant and appropriate content.

Elevate incorporated the feedback from the focus group meetings into the class manuscripts as well as additional edits from Amanda Stinton.

This milestone was completed.

Subtask 3.4 Storyboarding

Subtask Summary: After any adjustments based on focus group results, we will lay out each curriculum as a storyboard, outlining screen by screen what the students will see and how they will interact with the training.

Milestone 3.4.1 Storyboards created for each course.

Summary of Progress: Elevate submitted the completed real estate class manuscript to LLI at the end of December 2016 for storyboarding. With that document, LLI outlined the class screen-by-screen, mocking up what the student will view and how students will interact with the training. The process from storyboards to launch took about six months.

In the storyboarding process, Elevate developed graphics, videos, and other interactive elements. As the storyboarded modules were completed, Elevate thoroughly reviewed to ensure the content was correct, the photos and graphics suggested by LLI were relevant and interesting, and the activities Elevate designed were properly executed. This process involved several iterations with edits between Elevate and LLI. Elevate wanted to ensure that the storyboards were as close to complete as possible because once the class was loaded onto the learning management system, changes would become more difficult and take longer.

This milestone was completed.

Subtask 3.5 Develop Course Metrics and Evaluation Measures

Subtask Summary: Using the preliminary metrics and evaluation measures from SOPO Task 6 and our learnings during the analysis and design of the course, the metrics and evaluation measures will be finalized and prepped for submittal to our partners NAR and the LLI for feedback.

Milestone 3.5.1 Submit memo with final course metrics and evaluation measures to DOE.

Summary of Progress: The preliminary metrics and evaluation measures presented in the SOPO were finalized and reviewed by LLI in January 2017. They were submitted to DOE as a deliverable in the Continuation Report.

This milestone was completed.

Subtask 3.6 Storyboards Review and Feedback

Subtask Summary: As part of the iterative process of reviewing and ensuring quality is built into the courses, Elevate will invite a group of real estate agents and other stakeholders to review the storyboards and provide feedback. This review team will be made up of five to ten professionals balanced between past SMEs, focus group participants as well as new reviewers. The storyboards are then updated and signed off. Similarly, the storyboards for the appraiser and appraiser regulator courses will be reviewed and approved.

Milestone 3.6.1 Storyboards reviewed, updated and approved by stakeholders.

Summary of Progress: A group of five professionals balanced between past SMEs, focus group participants, and new reviewers reviewed the draft manuscripts developed in Subtask 3.4 and provided feedback. The reviewers for the real estate class included Amanda Stinton (NAR), Ben Hoen (LBNL), and Lesley McCain (ISEA). Feedback from reviewers was incorporated into the manuscripts before finalizing for beta testing. This milestone was completed.

Task 4.0 Develop Training Course for Real Estate Agents

Task Summary: Using completed storyboards, Elevate and its partners will develop the core curriculum components for the online training course for real estate agents. As outlined in the curriculum design, the course content will emphasize how to identify and interpret key characteristics of systems that impact the contributory value to a property. It will include training on how to identify the relevant information from an existing system in order to correctly populate a sales listing. It will also provide instruction on how to correctly interpret the information on solar systems in order to effectively communicate the information to homebuyers. While the focus will be on the data elements, we will also provide a basic overview of solar technology as applicable to residential installations.

Subtask 4.1 Creation of Online Training for Real Estate Agents

Subtask Summary: Once the storyboard is completed and approved by key stakeholders, Elevate's training development partners will review the course for adherence to the original curriculum and will then transition the course to LLI so that it can be transitioned into an eLearning/online format. This process is where the bulk of the content development occurs as text, graphics, animations, exercises, and other interactive components are transitioned from a storyboard format to an online format. Typically, during this process there is an interim review by key stakeholders to ensure the course is staying true to the storyboards, that the learning objectives are being met, and that the look and feel of the course is consistent with expectations. As this is a quick in-process review, it will be completed primarily by project team reviewers and a small select subset of the broader stakeholder group. Using their feedback, the course content development continues with the goal being the creation of the beta version that

will be administered to a geographically diverse group of at least ten real estate professionals. Beta testing will be performed before the course is uploaded on the online system to make any necessary adjustments during pre-production. During beta testing, the course will be evaluated against the metrics created during Task 3 and outlined in more detail in Task 6. While Elevate has made every effort to predict the specific measures and metrics that will be used during this course review, it is important to note that the National Association of REALTORS® (NAR) and LLI are the subject matter experts on real estate professional training and will be guiding the creation and adherence to metrics based on their standards and their currently existing state-by-state accreditation criteria. The DOE/Elevate team may therefore need to adjust our evaluation measures along the way in order to ensure NAR standards and accreditation requirements are met. The web-based training system will allow students to take the class at their own pace, starting and resuming as they wish until it has been completed. The course will also provide regular opportunities for students to interact with the system through quizzes and multimedia segments.

Milestone 4.1.1 Submit a summary of findings and updates from interim review to DOE.

Summary of Progress: A portion of this work (content, activities, and quizzes) was developed under Task 3 in Q3. The class manuscript was further reviewed by internal and external reviewers prior to being finalized for beta testing at the beginning of March 2017. Feedback from these reviews was overall positive and constructive, particularly the feedback from Amanda Stinton at NAR and Ben Hoen at LBNL. Updates were provided to DOE through the quarterly reports and deliverables. This milestone was completed.

Milestone 4.1.2 Beta version administered to a minimum of ten professionals and evaluated according to metrics defined in Task 6; findings submitted to DOE.

Summary of Progress: The beta version of the class was administered to 11 professionals in March 2017. The results of the beta testing were evaluated according to metrics refined in Task 6. Beta testers were given the completed manuscript in a fillable PDF format. Testers were instructed to complete quiz questions at the end of each module and to answer six questions for class evaluation purposes.

Each end-of-module quiz contained six quiz questions taken from the quiz bank developed for the online class. Eleven agents participated as beta testers for this class. All the testers answered the course feedback survey. Five completed the module quizzes. The overall quiz grade was 87% correct. Overall, testers were satisfied with the class content, structure, format, and other evaluation areas.

Beta testing results, feedback, and how the team decided to incorporate the feedback were submitted as deliverables to DOE with the Q2 2017 report. After the beta testing was complete and feedback incorporated, the team converted the manuscript of the real estate class into a detailed storyboard, outlining exactly the content for each slide, the

type of activities and how the student interacts with the class. The final storyboard for the real estate class was submitted to DOE with the Q2 2017 report.

Once the class was online, LLI recruited an additional 11 beta testers from their pool of testers to take the class to ensure the technology in the class worked correctly. The beta testers were a mix of real estate agents and education directors at REALTOR® associations. Several Elevate staff also took the class to ensure the solar information in the class was correct and that the interactive parts of the class worked correctly. The most important feedback we received was the potential for students to disengage from Module V because of the amount of new information students needed to learn in that module which focused on the software EiValue. To help keep students moving forward and to alleviate stress, Elevate added a slide acknowledging that this module was complex and offered the option to download the course manuscript free of charge with step-by-step instructions for using EiValue.

This milestone was completed.

Task 5.0 Develop Training Curriculum for Appraisers

Task Summary: Elevate's recommended curriculum for the appraiser training emphasizes how key characteristics such as ownership, financing, capacity, and age impact the contributory value to a property. In particular, the curriculum will focus on the identification and collection of the relevant information, interpretation of data, and how to use valuation tools such as the freely available and U.S. DOE supported PV Value tool to calculate a cash-flow based value addition. The curriculum will also be vetted by our program partners to be made eligible for CE credits required for license renewal in as many states as possible to incentivize appraisers to participate. The curriculum for the online class will be assembled into a three-hour, self-directed and interactive online class. Appraisers taking the online class will be issued a certificate of completion upon successful completion of the class. This course can be used as either a stand-alone course or as a complementary module to a more comprehensive solar course for appraisers that is not part of this scope. The curriculum for the in-person class will be a four-hour live class, delivered through the homegrown program offered by Appraisal Institute's chapters.

Subtask 5.1 Creation of Training for Appraisers

Subtask Summary: The content of the appraiser training will be developed following the same process as for real estate agents, Subtask 4.1.

Milestone 5.1.1 Submit a summary of findings and updates from interim review to DOE.

Summary of Progress: The class manuscript was further reviewed by internal and external reviewers prior to being finalized for beta testing at the beginning of March 2017. This milestone was completed.

Milestone 5.1.2 The training material for the chapters' homegrown seminars is complete and ready for launch.

Summary of Progress: The training material for the Home Grown seminar was finalized and submitted to DOE with the Q2 2017 report. The material included the student handbook, the instructor handbook, the evaluation package, and a question analysis to assist with class evaluation. The first live class was offered in October 2017. This milestone was completed.

Milestone 5.1.3 The training material for the online class is complete and ready for launch.

Summary of Progress: Since the Elevate team defined a new strategy for the appraiser course, making it into a live class first (as opposed to online), the process for creating this class began differently. After incorporating the focus group feedback based on the manuscript, Sandra Adomatis began the process of creating a slide deck that followed the manuscript. The Elevate team created a set of materials to share with the appraisal chapters offering the class and with the two instructors that Adomatis recruited to teach the class. The materials included an introductory letter to the appraisal chapter, instructor and student handbooks, the PowerPoint slides, a 12-question quiz, and a promotional flyer.

While the live class was underway, Elevate began the process of converting the manuscript into a form that LLI could use to create an online version of the class. Without a live instructor for the online class, it was crucial that the students were able to easily follow along. Elevate edited the original manuscript to simplify content that may be difficult to learn online. Elevate utilized in-house solar and utility experts to help present the material in a complete but easy-to-follow format. Elevate's communications staff helped develop new captivating images and graphics to make the class more interesting. Once the manuscript was complete, LLI turned it into storyboards and then loaded on the LMS. This milestone was completed.

Milestone 5.1.4 Beta version of both the in-person and online classes administered to a minimum of ten professionals and evaluated according to metrics defined in Task 6; findings submitted to DOE.

Summary of Progress: The beta version of the class was administered to 10 professionals in March 2017. The results of the beta testing were evaluated according to metrics refined in Task 6. Beta testers were given the completed manuscript in a fillable PDF format. Testers were instructed to complete quiz questions at the end of each module, and to answer six questions for class evaluation purposes. Each end-of-module quiz contained 10 questions that covered the material in that module. The overall quiz grade was 80% correct. After reviewing the quiz scores and survey feedback, the team realized that most of the beta testers did not have solar background (nine out of the 10 identified as "novice" when asked about their solar experience). This seemed to be an indication that there is lack of appraisers that have a background in this topic. Given the feedback received from the testers, we also concluded that the

course material the team developed was better suited to a live classroom setting with a live instructor than to an online class with remote support. The content covered in Module II, which focuses on analyzing utility bills, proved to be particularly difficult for many of the beta-testers. Findings of the beta test feedback were submitted to DOE as deliverables with the Q2 2017 report. This milestone was completed.

Task 6.0 (Q4: M10-M12): Setting up the Evaluation of Training Program

Task Summary: While confident that all of the courses delivered will be well received by course participants, having a robust evaluation process in place is important to overall success and reach of the program. The evaluation process will use Kirkpatrick's 4-level evaluation model as the basis to assess and improve each course. Specifics of the evaluation criteria and evaluation approach will be determined as part of the curriculum design in Task 3, Design Training Curriculum. It is also important to note that the DOE/Elevate team is working in close partnership with NAR and their training partners who already have pre-established processes for learning development and evaluation for the millions of real estate professionals across the country. In order for us to ensure our courses are accredited to reach the maximum number of real estate professionals, it is imperative that we follow their processes and standards. In that context, we will work toward the following metrics with the understanding that our course must be consistent with current offerings to be accepted, accredited and ultimately distributed. Elevate's recommended training metrics are listed in Subtask 6.1.

Subtask 6.1 Confirm Evaluation Metrics

Subtask Summary: Elevate's instructional designers will work with DOE and key stakeholders at NAR and LLI to confirm the evaluation metrics and reporting requirements. This process was started in Task 3, will be informed through the design phase of the course, and finalized in Q4. Selected metrics will be driven by the expected attendance as well as knowledge retention requirements of the projects. There are also standard training metrics for online courses that will be utilized so the course can be appropriately benchmarked and compared to similar courses offered to real estate professionals.

Milestone 6.1.1 Course evaluation metrics approved and confirmed by NAR, the Learning Library, and DOE. We will also establish the evaluation framework with Appraisal Institute chapters.

Summary of Progress: For the online real estate class, Elevate worked with its partners LLI and the CE consultant Preferred Systems (Preferred) to establish student performance metrics. This process was started in Task 3 and was informed through the design phase of the training. NAR suggested that the evaluation include a question about familiarity with their Green Designation. The final metrics were finalized in March 2017. For the live appraiser class, Sandra Adomatis and Elevate developed a 12-question quiz that was to be given to students after completing the class. Both classes included additional questions to evaluate the class effectiveness and student learning.

Class satisfaction

Elevate included an optional post-class evaluation for students to report on their satisfaction with the class. Based on feedback from LLI, Elevate set the goal of an 80% satisfaction rate. The questionnaire included open-ended questions to find out what students found most helpful or unhelpful.

Pre- and post-class survey

Elevate included three pre-class questions based on feedback from the DOE and NAR. The pre-class evaluation questions were re-iterated in the post-class evaluation to determine the effectiveness of the class. The pre-class and post-class evaluations assessed the following:

Real estate class

1. Current level of knowledge about solar photovoltaics
2. Likelihood that the student may be part of a transaction involving a solar home in the next five years
3. Familiarity with the National Association of REALTORS® Green Designation

Appraiser class

1. Current level of knowledge about appraising solar homes
2. Level of confidence about appraising solar homes
3. Familiarity with the AI's Residential Green and Energy Efficient Addendum
4. Having completed the AI's course Residential and Commercial Valuation of Solar

This milestone was completed.

GO/NO-GO DECISION

1. Storyboards for appraiser and real estate agent courses are approved by reviewers and key stakeholders.
2. Evaluation metrics have been confirmed by NAR, LLI, AI (pending successful integration of Elevate's course into their education portfolio), and DOE.
3. Based on the beta testing and utilizing the finalized evaluation metrics, the courses meet their intended purpose and quality level.
 - a. At least 10 individuals from each group (real estate agent and appraiser) will have participated in the beta testing, with each beta tester chosen by LLI and the corresponding institution for appraisers.
 - b. Results of testing will be evaluated using metrics developed in Task 6. At least 80% of beta testers will pass each course according to Task 6 requirements and at least 80% will indicate a satisfaction with the quality of each course. In that case, the courses will move forward to the implementation stage, including outreach and deployment of the courses. In case the beta testing does not meet the thresholds above, the project team will focus on course weaknesses identified in the testers' evaluation and adjust the courses before full deployment.

GO/NO-GO DECISION RESULT

The Elevate team was granted continuation of the project into Budget Period 2 having demonstrated progress per the go/no-go decision criteria.

BUDGET PERIOD 2

Task 7.0 Obtain CE Credit Approvals

Elevate and its partners will submit the courses for real estate agents for accreditation in as many states as possible (20 to 40 states) to incentivize professionals to participate. Approved courses will be uploaded on the web-based training system to be made available to the public.

Subtask 7.1 Obtain CE Credit Approvals for Real Estate Agents Class

Subtask Summary: The final online class will be submitted with appropriate documentation to the Association of Real Estate License Law Officials (ARELLO) to certify it meets their standards for Real Estate Continuing Education. Any changes requested by ARELLO will be made and the application resubmitted as necessary. Once approved by ARELLO, the class will be submitted to states that allow online self-paced training for Real Estate Continuing Education for approval. We will aim to get the class approved in 20 to 40 states and will prioritize states by their PV market size. The training course will be available as a non-CE option for real estate agents in all states. The approved class will be made available as discussed in Task 9.

Milestone 7.1.1 Signed approvals for CE credits received in 20 to 40 states.

Milestone 7.1.2 Final online training courses loaded into the web-based training system and fully debugged.

Summary of Progress: The first step to obtain CE credits for the real estate online class was for Preferred to submit the class to ARELLO. This process started later and took longer than originally planned. The ARELLO standards require snapshots of the online class as part of the supporting documents and a time study done by a minimum of 10 real estate professionals. The time studies could not begin until the class was published online in July 2017. All 10 studies were completed at the end of October 2017. With that information, Preferred was able to submit the ARELLO application for review in mid-November with a typical turnaround time for approval of 45 days. ARELLO's approval certification of "[Selling the Sun](#)" was issued on December 28, 2017. It will be valid until December 28, 2020.

After ARELLO's approval in December 2017, Preferred began applying for CE approvals on a state-by-state basis. Each state has its own requirements, forms, and certifying body, but most require ARELLO certification, which is why that step occurred first. Instead of applying to states based on PV market size, Preferred recommended applying to states based on the approval turnaround time. Times ranged from four

weeks to four months. Preferred began by applying to a mix of short- and long-term states. There are some states for which the class was not going to be approved because of varying state requirements. For instance, Massachusetts only accredits two-hour classes, while our class length was three hours; several states only accept classes that are written by local instructors and that cover state-specific information. Elevate created a class that met the requirements of the greatest number of states. Overall, Preferred applied for accreditation to 26 states and received CE approval in 21 states at the close of the project. Only two states, Delaware and North Carolina denied CE approval. Delaware would only approve online courses at the “Intermediate” level or higher, and North Carolina’s requirement is four-hour credit minimum. Applications for Texas, Missouri, and Vermont were submitted but not yet approved by the end of the grant period.

An unexpected development was the interest shown by real estate agent instructors to convert the class manuscript into a live class they could offer in their own state. This includes the following:

- **Utah:** Jared Priesler, an appraiser and real estate instructor in Utah, learned of both classes through Sandra Adomatis. Priesler asked if he could offer the classes in Utah because there was so much interest in the topic but very little education offering. Elevate provided the class manuscripts, timed outlines, and quiz questions and Priesler taught the real estate class live in Q1 2017 in Salt Lake City with 31 attendees.
- **Massachusetts:** Project partner Craig Foley converted the class to a live version and offered the class in Massachusetts twice. Foley was also awarded a grant from the Massachusetts Clean Energy Center to convert the class and offer it at a low rate in 2019.
- **Oklahoma:** Elevate converted the class to a live version after REALTOR® associations in Oklahoma and Chicago expressed interest in offering the class to their members. The class was approved for CE in Oklahoma and was taught in March 2019 by Elevate staff Pamela Brookstein.
- **Chicago:** Based on the class CE approval cycle, the Chicago Association of REALTORS® will begin offering the class in Q3 or Q4 of 2019.
- **Las Vegas and California:** Instructors from Las Vegas and California have expressed interest in converting the class to a live version but have not yet followed through. Elevate will continue to make the manuscript available to potential instructors as they reach out.

At the end of the project, the real estate class obtained accreditation for CE in 23 unique states: the online class was accredited in 21 states; the live version was accredited in three states. One state, Utah offers both online and live versions. A summary of the states in which live and online classes obtained accreditation over the grant period is included in Appendix A.

This milestone was completed.

Subtask 7.2 Obtain CE Credit Approvals for the in-person Appraisers Class

Subtask Summary: The final in person class for appraisers will be submitted to AI for dissemination to chapters through the homegrown seminar program. Interested chapters will be responsible for submitting the class for CE accreditation to their states. The Elevate team will work with AI to encourage chapters to offer the class and seek CE accreditation. The Elevate team will provide guidance, remind homegrown groups on a regular basis to seek accreditation, and take responsibility for tracking the progress of this CE process.

Milestone 7.2.1 Approvals for CE credits for the live appraiser class received. We will target accreditation in 20 to 40 states for the appraiser class (in-person and online).

Summary of Progress: Similar to the real estate class accreditation, the process for obtaining accreditation for the live appraiser class is on a state-by-state basis, submitted to the proper licensing department by the instructor or institution offering the class. Sandra Adomatis recruited two appraisers/instructors and set up phone meetings with each instructor to “train the trainer” and answer any questions. Elevate, Adomatis, and the other instructors began outreach to AI chapters in June 2017.

The instructors focused on teaching in states where they had already taught and where they had already developed a reputation as trusted instructors. These included some of the states with the highest solar penetration in the country, such as Colorado and Florida.

As the industry became more aware of this solar class, Elevate was approached by three additional instructors interested in teaching the class. These instructors are located in Utah (mentioned in Subtask 7.1), California, and Oregon. They were able to obtain accreditation for the class in their home states as well as in Arizona.

At the end of the grant period, the live appraiser class obtained accreditation for CE in 15 states. This milestone was completed in combination with Milestone 7.3.1.

Subtask 7.3 Obtain CE Credit Approvals for the online Appraisers Class

Subtask Summary: We will work with our consultant to submit the online appraiser class for accreditation to states directly following a similar approach as for the real estate class. We will prioritize the top 20 solar states based on 2016 rankings released by the Solar Energy Industry Association (SEIA).

Milestone 7.3.1 Signed approvals for CE credits for the online appraiser class received. We will target accreditation in 20 to 40 states for the appraiser class (in-person and online).

Milestone 7.3.2 Final online training courses loaded into the web-based training system and fully debugged.

Summary of Progress: Elevate's online appraiser class went live on [Learning Library](#) in Q8. At that point in the process, Elevate decided not to submit the online class for CE approvals; the cost of doing so would outweigh the benefit given that Elevate's portal for taking the class was planned to be taken down in February 2019. By this point, both On Course Learning, an online school for real estate agents and appraisers, and AI had expressed interest in hosting a version of the class.

By June 2018, AI decided to move forward and develop their version of the appraiser class based on Elevate Energy's class. By the end of the grant period, AI's online class was approved in 27 states. As of this writing, the online appraiser class is accredited in over 40 states. A summary of the states in which live and online classes obtained accreditation over the grant period is included in Appendix A. This milestone was completed in combination with Milestone 7.2.1.

Task 8.0 Develop Training Curriculum for Appraiser Regulatory Officials

Task Summary: Elevate and partners will develop a shorter, one to two-hour overview of proper appraising of PV systems based upon the curriculum developed for appraisers (following Subtask 5.1) for delivery by webinar to appraiser regulatory officials. The curriculum will be developed using the same methodology as Subtask 3.1. AARO will provide early guidance for content needs and will provide review of the draft curriculum to ensure it is accurate and addresses the concerns of their membership. Given the relatively small size of the target audience and the lack of a need for CE credits, once finalized, the draft curriculum will be produced as a PowerPoint presentation for delivery over a webinar. The webinar will include interactive elements, such as questions to test comprehension and knowledge retention.

Subtask 8.1 Creation of Webinar for Appraiser Regulatory Officials

Subtask Summary: The content of the appraiser regulatory officials training will be developed in conjunction with the appraiser training course following a similar process as described in Subtask 5.1.

Milestone 8.1.1 Submit a summary of findings from interim review and final webinar to DOE for review of materials prior to webinar deployment (which occurs in Milestone 9.1.2).

Summary of Progress: In May 2017, based on the outline of the appraiser class, Sandra Adomatis completed the slide deck for the appraiser regulatory officials. It was written to be a one-hour presentation. This milestone was completed.

Task 9.0 Implementation of Outreach Framework

Task Summary: Elevate and partners will make the real estate agent and appraiser trainings available online for students to complete at their own pace. The in-person appraiser class will be delivered through the homegrown seminar program by individual AI chapters. The appraiser regulator class will be delivered twice by webinar, recorded and uploaded into AARO's website for their membership network. Through these avenues, we will reach the targeted numbers of real estate agents, appraisers, and regulators as outlined in the objectives. To promote the class, we will utilize our existing networks including our partners LLI, NAR's Center for REALTOR® Development and AARO's membership network. Elevate will work with AI to promote the class to the chapters.

Subtask 9.1 Offering of Trainings

Subtask Summary: The real estate agent and appraiser classes will be offered through a self-paced online training system that allows students to start and resume at any time throughout the process. The systems will track participation and offer quizzes to ensure student understanding of the material. The real estate agent and appraiser class will be offered at a nominal fee (approximately \$20 to \$35) to students to cover hosting fees and the fee for delivering a continuing education credit, where applicable. The nominal fee also provides an incentive for a student to complete the course. This rate is essentially the "floor" for online training available through these platforms, with courses of similar length typically costing \$150 to \$300 or more. The webinar for appraiser regulators will be delivered through Elevate's conferencing services at no cost to attendees with attendance tracked by the webinar system. The webinars will be conducted live twice, with the final version recorded and uploaded on the AARO website.

Milestone 9.1.1 Training courses will be available online through partners' websites and on an Elevate/SunShot branded microsite (real estate and appraiser) or offered in-person (appraiser).

Summary of Progress:

Appraiser Live Class

The first live appraiser class was offered in Florida in October 2016. Since that time, the class has been held in 13 states, and 752 appraisers received continuing education credit. As of the writing of this report, there are four classes on the schedule for spring 2019: two in California, one in Florida, and one in Arizona.

The milestone for this subtask was to teach 1,000 appraisers by Q12. Elevate reached the original goal of 500 appraisers, but when Elevate applied for the no-cost extension of the DOE grant, we modified the goal and increased the target number. While we have not reached 1,000 enrollments by the end of this project, it seems likely that this goal will be reached by the end of 2019.

Further, AI launched a version of this class on their online continuing education site and predicts 120 students will take the class in the first year. Additionally, all of the instructors have added the class to the roster of classes they teach and plan to continue promoting the class to AI chapters and other schools in which they teach.

Real Estate Agent Class

The real estate class was published online as of July 20, 2017. The class was available on the NAR educational platform CRD and on Elevate Energy’s portal at the following links:

- [CRD](#)
- [Elevate](#)

The class is also linked through over 700 real estate affiliate sites. A summary of enrollments by class offering and platform source is included in Figure 1, Figure 2, and Figure 3.

Figure 1. Summary of Enrollments – Real Estate Class (Live and Online)

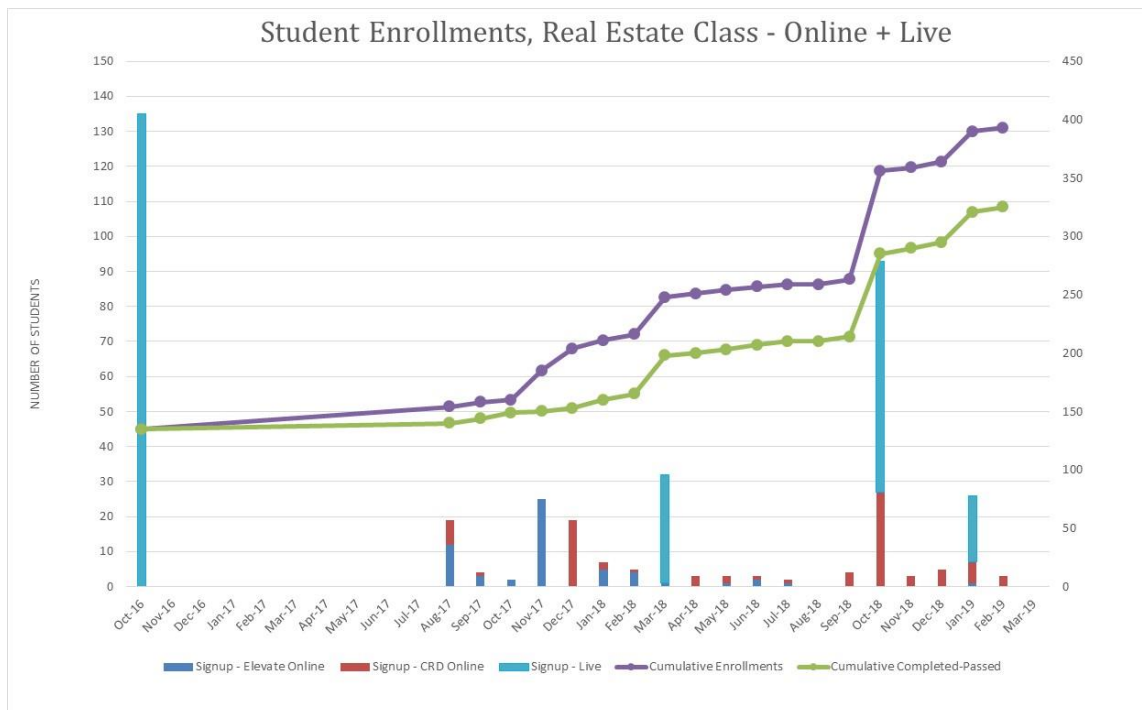


Figure 2. Summary of Enrollments – Real Estate Class (Online)

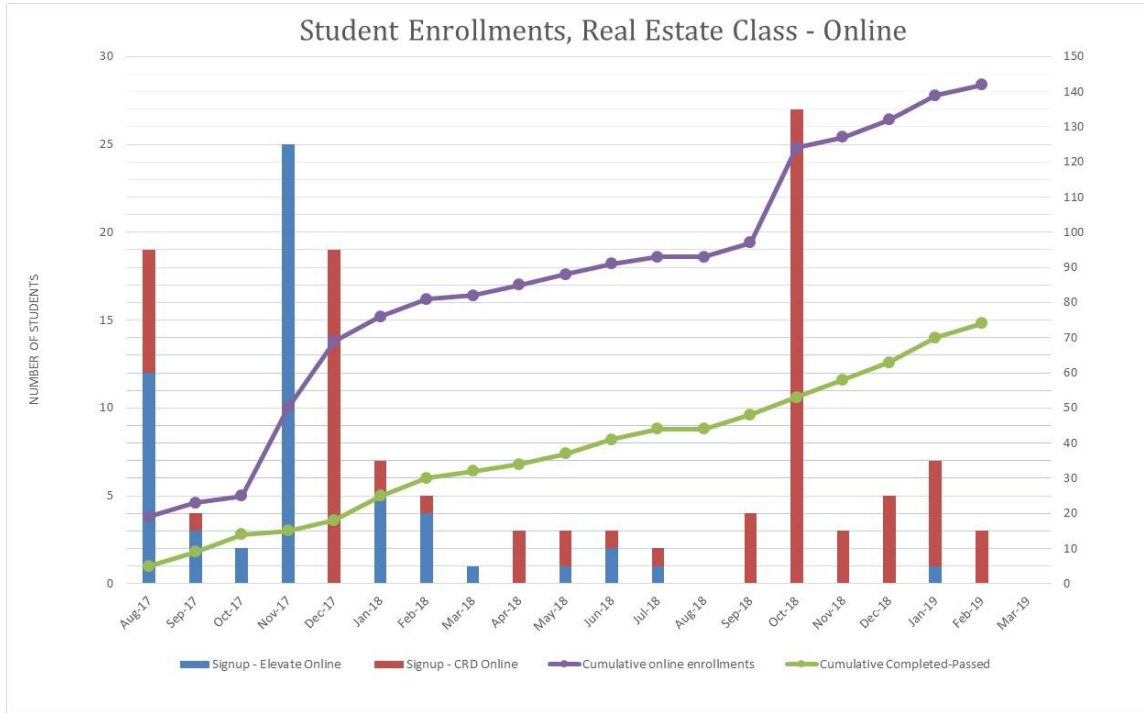
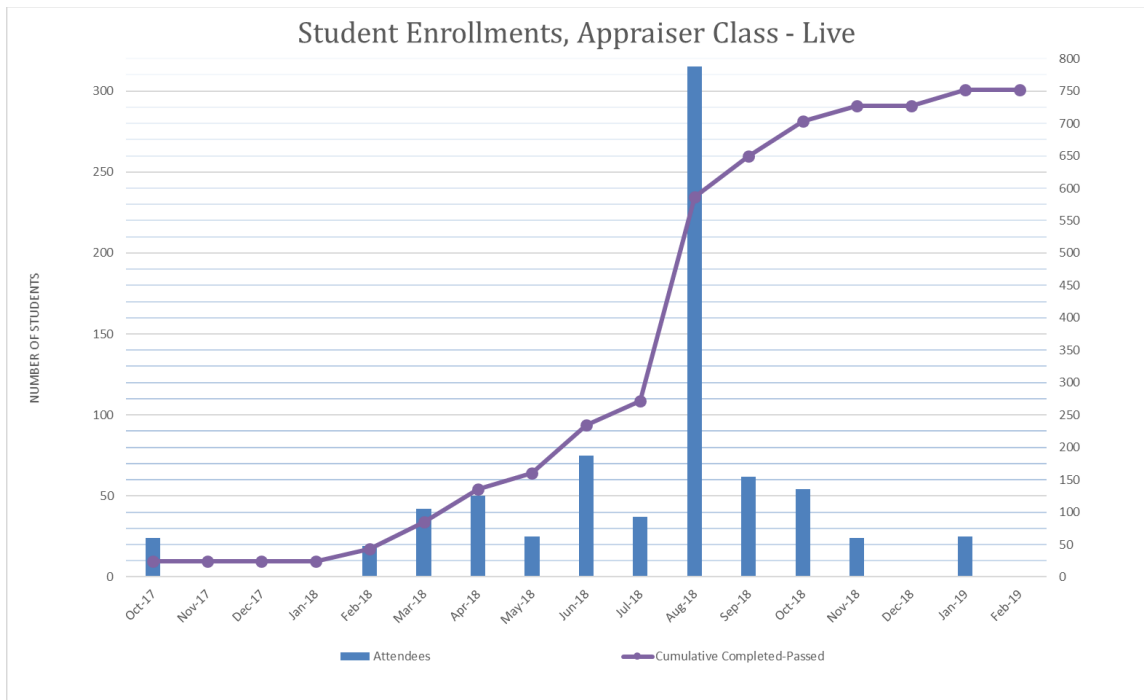


Figure 3. Summary of Enrollments – Appraiser Class (Live)



The target number of enrollments for the real estate class (online and live) was not achieved over the course of the grant period. However, Elevate Energy is confident that the industry has picked up interest in this topic as demonstrated by the renewed interest from CRD, OnCourse Learning, and AI. Their combined interest in sustaining the course beyond the grant period suggests that more enrollments in these classes, or their versions of these classes, will continue to grow and will meet the original intent of this project.

Milestone 9.1.2 Conduct two live webinars for appraiser regulator officials and a live training at the AARO's October 2017 conference.

Summary of Progress: The first offering of this class was presented live by Sandra Adomatis in October 2016 at AARO's annual conference in Washington DC. There were approximately 75 attendees and the feedback from the presentation was very good. Attendees reported back to Adomatis that most of what she talked about was new information for them and would be helpful in their work.

Adomatis revised her webinar presentation based on input from the development of the appraiser class and then offered the first 90-minute webinar for appraiser regulators on July 21, 2017. An email invitation was emailed to 76 appraiser regulator contacts found on the Appraisal Subcommittee [directory](#). There were 10 attendees, representing Arizona, Kentucky, Nebraska, California, Oregon, Iowa, and Washington, D.C. The webinar was posted on Elevate's website.

The second webinar was scheduled for September 22, 2017 but was cancelled due to low attendance. The team sent three emails to the list of 76 appraiser regulator contacts. There were four registrants from the same office in the state of Washington. Elevate reached out and let them know that the first webinar was available to watch on the Elevate site.

Elevate's goal for this task was to reach 60 appraiser regulators by the end of Q8. In total, 85 appraiser regulators saw the presentation either in person or on a live webinar (Table 3.) The online webinar has been viewed 68 times. Adomatis had planned to attend the 2017 AARO conference as described in the milestone, but later decided to redirect the budget to her teaching the live appraiser class in Rhode Island, Massachusetts, and New Jersey.

On the original writing of the STEP proposal, AARO provided a letter of support and offered to promote the webinars and post a link to the online version of the webinar, but a change in leadership led to a dissolution of the agreement. The team was able to achieve the milestones by promoting the webinar to its combined network.

This milestone was completed.

Table 3. Summary of Enrollments - Appraiser Regulatory Officials Class

Quarter	Target Student Milestone	Total Students Reached
Q4	30	75 (in person)
Q8	60	10 (live webinar), 68 (online webinar)
Total		153

Subtask 9.2 Promote Trainings Further

Subtask Summary: Elevate and its partners will advertise the training courses through their existing networks to reach the intended audience. With both sets of professionals requiring CE credits to maintain their state licenses (generally renewed every two years), there is a strong incentive for participating in CE activities. The nominal cost of this training makes it attractive to those looking to meet this requirement. The course will be included in NAR’s Center for REALTOR® Development, where it will be presented as an option to at least 50,000 REALTORS®. The 5,000 agents nationally with NAR’s Green Designation make up a strong initial audience. Through AI chapters’ educational program, the class for appraisers will be offered live at a local level to members in states where solar PV has a larger market. Elevate’s Value for High Performance Homes Campaign (VHPHC) connects with partners nation-wide working locally who will also help promote the training to their constituencies, including both agents and appraisers. The online classes will be also offered on an Elevate/SunShot branded website, which will be promoted to appraisers and real estate professionals leveraging our partnerships and networks. The course for appraiser regulators will be promoted by AARO through email messages and newsletters to their membership, which is the target audience.

Milestone 9.2.1 Announce the launch of the course through our partners’ strategic communication channels.

Summary of Progress:

Real Estate Class Promotion

Over the course of the project, Elevate enacted strategies to promote the class to various audiences in order to increase class enrollments. The team created a marketing kit that we sent to our real estate partners and industry network. Elevate used its social media platform to promote the class and emailed news alerts to a mailing list of approximately 400 professionals across the country four times. Elevate and partners presented at conferences and on webinars to promote the class. The team also created a [webpage](#) devoted to promoting the class.

Elevate met with Earth Advantage and Build It Green to explore the opportunity to become CRD affiliates. Earth Advantage became an affiliate and actively promoted the class to their real estate contacts.

CRD was helpful in promoting the class. They posted links to the class on 700 of their affiliate sites consisting of state and local associations, real estate schools, and individual broker sites. They sent several emails to their membership to promote the class. Their most successful effort occurred in October 2017 when they held a 24-hour half-price sale for the class, which led to a bump in enrollment.

CRD introduced Elevate to NAR's Manager of Member Devolvment who works with the Education Directors at the state REALTOR® associations. As the class earned state CE credits, Elevate sent state-customized marketing materials to the Manager who forwarded the information on to the association. Additionally, Elevate sent those materials directly to the Education Directors at local associations across the states.

LLI posted unique links to the Elevate Energy portal on its 18 affiliate sites. They helped Elevate set up a system to enroll students at the 2017 NAR Conference and Expo, which, while not a huge success, led to 22 enrollments. LLI sent press releases on Elevate's behalf to RIS Media. The Green REsource Council hosted a webinar on the class and promoted the class through their social media on Facebook.

Appraiser Class Promotion

To reach potential instructors, Elevate and Sandra Adomatis held a train-the-trainer webinar on July 6, 2017 for interested instructors. Two potential instructors attended the webinar. They were interested in teaching the class in Ohio, West Virginia, Washington D.C., North Carolina, Indiana, Ohio, Illinois, and Kentucky.

Kicking off the major outreach for the appraiser class, Elevate emailed invitations to promote a webinar Elevate and Adomatis held to promote the appraiser solar class on July 26, 2017. Elevate sent the email to 120 appraisal chapter contacts cultivated from AI's chapter contact page. There were 9 attendees from AI chapters in Georgia, Utah, Nevada, Ohio, Texas, Pennsylvania, and New Jersey.

Over the course of the grant period, Adomatis reached out regularly to her vast appraiser chapter network, asking about their interest in offering the class. She was very successful in offering the class in her home state of Florida. Additionally, she was able to secure classes in Vermont, Rhode Island, Massachusetts, and Illinois. At the Illinois Coalition of Appraiser Professionals conference, Adomatis reached 375 appraisers.

Throughout the project, Elevate promoted the class on social media and through Elevate's news alert. However, as Adomatis is a well-respected and trusted instructor across the country, her personal outreach was the most effective. Overall, the partnership with Adomatis in this project was invaluable.

Appraiser Regulatory Officials Webinar Promotion

Progress on this task is reported under Subtask 9.1.

This milestone was completed.

Task 10.0 Evaluate and Improve Training Programs

Subtask 10.1 Evaluate Courses and Knowledge Retention

Subtask Summary: Elevate's online host partners will generate monthly reports based on agreed metrics. Elevate will also receive reports on attendance and evaluation metrics by AI chapters that offer the class as a homegrown seminar. Elevate will analyze the course evaluation data and report findings to DOE and key stakeholders. Any needs for improvement will be compiled in a recommendations report for future course amendments.

Milestone 10.1.1 Submit quarterly reports with findings and recommendations for action.

Summary of Progress: All students who completed the class passed the five end-of-module quizzes with scores of 100%. The target was a minimum pass rate of 80%. This milestone was completed.

Subtask 10.2 Update Courses as Needed Based on Evaluation Feedback

Subtask Summary: Based on course feedback Elevate will work with the online host to update the course as needed. Considerations related to accreditation and stakeholder reviews will be taken into account and approved prior to any course updates.

Milestone 10.2.1 Summary reports describing amendments to the course, if any, and new evaluation results from trainings conducted that involve those amendments to indicate if improvement has occurred.

Summary of Progress: Elevate included an optional post-class evaluation for students to report on class satisfaction (Table 4) with a target satisfaction rate of 80%. The questionnaire included open-ended questions to find out what students found most helpful or unhelpful (Table 5). 12 out of the 20 students who left comments reported they found the valuation information most helpful (Module V of the class).

Though we included three pre-class questions, no one opted to fill out that questionnaire. The questions were:

- What is your current level of knowledge about solar photovoltaics?
- How likely is it that you will be part of a transaction involving a solar home in the next five years?
- Are you familiar with the National Association of REALTORS® Green Designation?

While there were comments about changes that should be made to the class, there was not enough agreement from commenters to make changes. Two commenters did not like the audio. However, the standard audio used by LLI and CRD could not be

modified. This information was provided to CRD and OnCourse Learning to help inform their decisions around class design.

Table 4. Post-Class Evaluation

Post Class Evaluation	
Q8 - Q12	
Total Number of Responses	34

	Strongly Agreed	Agreed	Neither	Disagree	Strongly Disagree	% Strongly Agreed or Agreed
The class was interesting	32	2				100%
The class is well organized	29	4	1			97%

	High	Medium	Low			
Rate your overall experience with the class	26	7	1			97%

Table 5. Student Comments

Q1: What did you find most helpful in the class?	<i>"Valuation information."</i>
	<i>"Learning about the contribution to value and how to calculate."</i>
	<i>"Understanding valuation with regards to ownership type."</i>
	<i>"Eivalue walk through."</i>
	<i>"Info about the inverters and valuation I didn't previously know."</i>
	<i>"The course did a good job of explaining the meaning behind the acronyms."</i>
	<i>"The live chat assisted at times when the course program would not allow me to move forward"</i>
	<i>"Team works with a lot of solar listings so we will be incorporating the EiValue.com tool into our listing presentation."</i>
	<i>"Valuation info, and you can stop and start at your leisure."</i>
	<i>"Contributory value of a PV system and the ownership / lease options. The PV Value tool information."</i>
	<i>"How an appraiser looks at solar."</i>
	<i>"Basic info regarding terms and components."</i>
	<i>"The PV Value & Ei Value tools"</i>
	<i>"Financial options and incentives."</i>
	<i>"DSIRE as a resource."</i>
Q2: What can be done to improve the overall quality or experience?	<i>"Immediately useful information to assist homeowners."</i>
	<i>"How to list a home with PV. How to value a home with PV."</i>
	<i>"How to correctly price a solar PV home."</i>
Q2: What can be done to improve the overall quality or experience?	<i>"The student engagement techniques are generally good but they are over-used in this course. Too many different tools were used. I suggest you simplify to improve the student experience."</i>
	<i>"Nothing comes to mind."</i>
	<i>"I did not have a great experience with this CE course as I found it to be extremely difficult to navigate."</i>

	<i>"Some class examples on calculating present values of PV systems at various ages."</i>
	<i>"More audio."</i>
	<i>"The spoken recording is horribly slow, no one talks like this!"</i>
	<i>"It felt like the program was being narrated by a 90s text reading program. Some real glaring pronunciation errors threw me off while trying to absorb all this amazing info."</i>
	<i>"Module V was very hard and complicated."</i>
	<i>"Update annually to ensure information is current."</i>
	<i>"More case study examples - how to help a seller decide whether to pay off/buy out or transfer a loan or lease and to set the sales price of a home to reflect this. Let me know if you decide to add this, or need further clarification (Note: This commenter is not a real estate agent – she is in solar sales)"</i>

Task 11.0 Program Sustainability

Subtask 11.1 Develop options for program sustainability.

Subtask Summary: Elevate Energy will identify options to ensure that the training program can be sustained beyond the grant period. We expect that once the classes are available online or in-person, and upon successful attendance, many organizations will be interested in taking over the course.

Milestone 11.1.1 Summary of options for program sustainability provided to DOE.

Summary of Progress: Elevate started to evaluate options for program sustainability in 2017 and provided a summary of options with the Q6 2017 report. At that time, Elevate identified six prospective organizations to maintain solar valuation classes for real estate professionals. This milestone is complete.

Subtask 11.2 Analyze feasibility of options

Subtask Summary: There are a few considerations to take into account when analyzing and narrowing down the most feasible options for program sustainability. Elevate will analyze different options and will start conversations with different organizations to evaluate potential interest and additional criteria to consider. We anticipate that these criteria will include, but will not be limited to the following:

1. **Maintenance of continuing education capabilities.** Continuing education accreditation typically lasts 3 years, but some states require a renewal application every one or two years. An organization that will be able to handle these requirements will be best suited to maintain the program long term.
2. **Cost of maintenance.** Maintenance of a continuing education class involves costs such as renewal fees, hosting fees, instructor support, technical support. The fee model will impact the ability to support these costs over time.

3. **Potential reach of target audience.** An organization that offers the furthest reach will be best suited to make the program successful and impactful over the long term.

Milestone 11.2.1 Analysis of options for program sustainability provided to DOE.

Summary of Progress: After further conversations with the initial options identified under this task, Elevate analyzed the advantages and challenges of the online schools considered for real estate class sustainability and reported a summary to DOE with the Q7 2017 report (Table 6). By Q9 2018, AI was also onboard to offer the class in their online educational platform in 2019. This milestone is complete.

Table 6. Summary of Analysis of Real Estate Education Providers

		Advantages	Challenges
OnCourse Learning Real Estate	Online real estate school	<ul style="list-style-type: none"> Extremely interested in offering the online classes on their LMS One of the largest online real estate schools in the country Dedicated marketing team National reach, offer CE in 44 states They have the resources to maintain and update the class 	<ul style="list-style-type: none"> No established relationship They will redesign the look of the class; Elevate will not have input Unsure of their solar expertise on staff
Center for REALTOR Development	National Association of REALTORS online real estate school	<ul style="list-style-type: none"> Project partner Brand recognition for REALTORS National reach 100's of REALTOR association affiliate partners Dedicated marketing team They have the resources to maintain and update the class 	<ul style="list-style-type: none"> To date, they have not dedicated many resources to promoting the class

Milestone 11.2.2 Secure an appraiser school to support class accreditation

Summary of Progress: See Milestone 11.3.1.

Subtask 11.3 Select most feasible option and program transition

Subtask Summary: Based on the analysis of different options, Elevate will work with the selected organization to develop a transition for beyond the grant period.

Milestone 11.3.1 Transition plan to selected organization using selected model(s).

Summary of Progress:

Real Estate Class

In 2017 Elevate began looking to potential entities that would be interested in hosting the online classes beyond the grant period. In November 2017, when Elevate had a booth at the NAR Conference and Expo, we were approached by the Vice President of Real Estate Product Management from OnCourse Learning, an online school for real estate agents and appraisers. He was interested in offering both solar classes. We see

a for-profit online school for real estate professionals being interested in investing resources to develop two new classes on solar valuation as a positive sign.

We met with OnCourse in December 2017 and began to talk about the steps needed to transition the course to OnCourse. Elevate Energy provided the class manuscript and other documentation that OnCourse can use to develop the classes on their online educational platform. OnCourse expects to launch the classes in 2019.

The CRD, where the online real estate class is currently offered, has agreed to continue hosting the class. However, because CRD uses The CE Shop for their CE school, they stopped offering CE units to students on March 1, 2019. CRD plans to transition the CE for the class in 2020.

As for the live class offerings of the real estate class, Elevate will continue to promote the class to real estate associations across the country and offer it as requested. The Chicago Association of REALTORS® (CAR) has committed to offering it four times over the course of a year, starting in Q2 2019. Since all classes in Illinois must submit for accreditation in June 2019, even if they were accredited right before that deadline, it is expected that their timeline for accreditation will align with the deadline.

The live class will continue to be offered by Craig Foley in Massachusetts. The instructor in Utah plans to do the same as time permits. Finally, Elevate will continue to make the manuscript timed outline, objectives by module, and quiz bank available to other instructors who are interested in teaching the class.

Appraiser Class

Perhaps the most interesting development was AI's decision to offer the class on its [online continuing education site](#). It appears they wanted proof of concept before investing in the class. They submitted the completed class to IDECC in November 2018 and received approval in December 2018. They received Appraiser Qualifications Board approval in January and are in the process of getting state approvals for CE credit. At the time of this report, the class is approved for CE in over 40 states.

AI also confirmed that they will be promoting the Home Grown live version of the class to its chapters on a more regular basis. All the instructors for the live appraiser class have added the solar class to the roster of classes they offer to appraiser chapters and plan to continue to do so.

Appraiser Regulatory Officials Webinar

Elevate reached out to AARO several times to inquire about their interest in hosting the appraiser regulatory webinar beyond the grant period. To date, AARO has not responded. Elevate will continue to host a link to the appraiser regulatory webinar on our [website](#).

6. Significant Accomplishments and Conclusions

The most significant accomplishment from this project is the creation of two high-quality classes (one for appraisers, one for real estate professionals) and one webinar for appraiser regulators that will live on and continue to impact the real estate market. We're basing the success on two factors: student feedback and industry response.

Successes

Student Feedback

Student feedback from all the courses was extremely positive. Student feedback supported the project premise that most real estate professionals do not know how to value solar homes and that very often they are not aware that value exists. An appraiser in Texas who took the real estate class provided this feedback: "I wish more of our rural agents in Texas would take your course. I know a lot that do not know anything about solar panels and would guess that owners/sellers are missing out on dollars at the time of sale."

The Continuing Education Program Supervisor with the Nevada Real Estate Division had this comment: "This is the best distance learning class I have taken. No part of the content was filler and each section of education was instructed in an unbiased and clear way. The class goals were clear. There was information that would be helpful to new and experienced licensees. Solar is frequently misunderstood and creates liability without proper knowledge."

Throughout the grant period, several real estate agents have shared stories that support the need for more education about solar in this profession, from real estate agents that turn buyers away from homes with solar, to agents that encourage sellers to remove their systems before putting their home on the market. A solar installer in the Sacramento, CA area stated that they receive one to two calls a month from customers asking for real estate agent referrals because the agent they had previously engaged told them their system has no value in the real estate market. We heard that one appraiser in Vermont says most of his business is now removing systems from homes before they are put up for sale.

Industry Response

The classes developed through this project were well-received by the real estate education industry. The classes were offered online and in person. Throughout the grant period, Elevate Energy established the following relationships that are the basis for the sustainability of the courses beyond the grant period:

- [OnCourse Learning](#), an online CE school for real estate agents and appraisers, recognized the market need for solar valuation classes and wanted to fill the gap in their course offerings. Elevate Energy offered class manuscripts so that OnCourse Learning could launch new versions of the classes on their educational platform.

- The [Center for REALTOR® Development](#), which currently hosts the existing version of the real estate class, will continue to host the class beyond the grant period.
- [The Appraisal Institute](#) created their online version of the appraiser class for their own school. AI has also shown commitment to continue to promote the live appraiser class to the local chapters through the Home Grown program.

Elevate Energy sees the continued support of the classes by CRD and AI as a testament to the need for these classes for their industries.

Elevate Energy is also encouraged by the number of instructors who are teaching the live versions of both classes. This was an unexpected development. On the appraiser side, Sandra Adomatis recruited two instructors she knew were competent in appraising solar and had good reputations. Three more instructors (from California, Utah, and Oregon) contacted the team to become instructors. On the real estate side, the class is taught live by two instructors in Massachusetts and Utah. Additionally, Elevate has invested in creating a live version of the class to offer in Chicago and elsewhere as requested.

Challenges

The Elevate Energy team encountered several challenges on this project. There were two major setbacks that came the first few months of the project that affected the project timeline as well as other challenges that affected the original SOPO targets. A summary of the challenges and how the Elevate team addressed them is presented below.

Project Team Changes

The Elevate team had several initial partners dedicated to specific scopes of work. Two of the partners decided not to join the project within the first six months of the project. This was a major set-back that affected the project timeline.

1. Our original CE provider was brought on the team during the proposal stage. Once the project started, it was not clear to The CE Shop that an entity outside of CRD was going to create the class content. This conflicted with their contractual expectations so they decided not to join the project.

To resolve this challenge, Elevate Energy considered several options and decided to look for a new CE provider. This search proved to be more difficult than expected because the CE provider's scope for this project was limited to managing the class accreditation process while most CE providers also offer instructional design all in one package. Nonetheless, Elevate Energy was able to engage with Preferred Systems, Inc., a CE school based in Baltimore that was willing to work with the established team. This initial challenge caused a major shift in the class accreditation timeline and an additional level of coordination needed between Preferred and LLI to ensure that students received CE credit when they passed the class.

2. AI decided not to join the project within the first few months of the project. AI's proposed role was to both manage the appraiser class accreditation and to offer the class through their online platform. However, early in the project, a representative of AI stated that the school did not have capacity to work on this new online class. Therefore, they did not join the project team, but have since returned as a sustainability partner.

The Elevate team's biggest asset in the development of the appraiser class was project partner Sandra Adomatis. Due to Adomatis' strong relationship with AI and her understanding of other avenues to explore, AI decided to support the launch of a live class, instead of an online offering, through AI local chapters' Home Grown program. Through this program, Elevate Energy offered the training material to the local chapters free of charge while AI chapters managed the training events, including logistics, registration, and instruction. Adomatis, a nationally recognized and well-respected instructor and expert of valuing solar installations, was successful in securing teaching opportunities in six states.

Industry's Lack of Knowledge of the Subject Matter

The Elevate team generally found early resistance to solar coming from training organizations because this subject is often perceived as not relevant to the real estate market. For example, the Home Grown program for appraisers was not easy to promote to AI chapters due to an apparent lack of interest in the topic. Similarly, many agents with whom the Elevate team engaged reported that they did not need to learn about solar because there was no solar in their communities. The lack of interest and often lack of knowledge of this subject presented a challenge to the dissemination of both solar courses, especially early on in the project.

However, the solar market is shifting. Illinois is an example of how the solar market is expected to grow and how real estate professionals will have to be ready, if not ahead of the curve. As a result of Illinois' Future Energy Jobs Act (FEJA), tens of millions of dollars will be invested in solar installations in Illinois over the next few years. Due to lack of knowledge of this critical legislation, the real estate market is not yet foreseeing the growth ahead. To proactively educate the industry, Elevate approached CAR and proposed to offer the solar valuation training to their members. Elevate initially explained the potential impact of FEJA on the residential solar market in the state of Illinois to representatives of CAR's Education Committee. The Committee had no previous knowledge of FEJA and was surprised to learn that solar was even a viable option in Chicago given the cold weather (a common misconception). After initial hesitation due to lack of knowledge, CAR understood that solar is a relevant issue to real estate professionals and that they should work to offer educational opportunities to their members on this subject. The next challenge would be to encourage students to attend the classes.

Project Goals

One of the biggest challenges in this project was to reach the goal included in the original SOPO of 5,000 real estate professionals signing up for and completing the class. That number was based on the total number of real estate agents in the country (approximately two million). As the project developed, with the shift in the timeline of class accreditation as well as upon initial hesitation coming from the industry, the team acknowledged that the grant period was not enough time to reach that target and that this would remain an aspirational goal for the project beyond the grant period.

To reach the largest number of students, the team developed diverse offering methods, both live and online, and provided the training material to instructors interested in teaching the class. Both methods proved to be effective in different ways: the in-person offering was generally preferred for the personal touch and ability to ask questions of an instructor. The challenge with live classes is two-fold: 1) the limited outreach to geographies and locales that are hosting training events, and 2) with instructors with diverse backgrounds, there is a risk that the class is not instructed consistently without an instructor training program in place to support this method of training.

Elevate also worked closely with partners such as NAR's Green REsource Council, CRD, and LLI to promote the class to their membership, to offer discounts at events, and to implement other marketing strategies. We believe that while it will take much longer to reach the goal of 5,000 real estate agents educated than originally anticipated, the number of students that take the class will continue to grow. Elevate will continue to report to the DOE, as feasible and available, the number of students that take the class through OnCourse Learning and CRD.

Course Evaluation

Elevate included both a pre-class and a post-class evaluation to measure students learning based on the class content as well as to evaluate class satisfaction. The post-class evaluation was completed by 34 students. Both evaluations were optional.

The pre-class evaluation included three questions that were later restated in the post-class evaluation. The questions were:

- What is your current level of knowledge about solar photovoltaics?
- How likely is it that you will be part of a transaction involving a solar home in the next five years?
- Are you familiar with the National Association of REALTORS® Green Designation?

Since the evaluation was optional, most people skipped right to the class and opted not to answer these questions. Based on these results, the team believes that any pre- and post-evaluation should be kept concise but made mandatory instead of optional in future class updates.

7. Inventions, Patents, Publications, and Other Results

No inventions or patents were developed as part of this project. The subject was presented at several conferences and events. These events were also a chance to promote the training offerings to the real estate industry.

Conference Presentations

- **2016 NAR Conference and Expo**
Title: “Valuing Solar Installations for Real Estate Resale”
Panelists: Pamela Brookstein (Elevate Energy), Craig Foley (Sustainable Real Estate Consulting), Sandra Adomatis (Adomatis Appraisal) Eileen Oldroyd (California real estate agent), and Chet McGensy (Solar Energy Industry Association)
- **2016 Appraisal Institute Conference**
Title: Appraising the Sun with the PV Value® Tool
Panelist: Sandra Adomatis, Jamie Johnson (Energy Sense Finance)
- **2016 Southeastern Building Conference**
Title: How to Select and Market High Performance Properties
Panelist: Sandra Adomatis
- **2016 Association of Appraiser Regulatory Officials Conference**
Title: Valuing Solar PV
Panelist: Sandra Adomatis
- **2017 NAR Conference and Expo**
Title: Valuing Solar Installations in the Marketplace
Panelist: Sandra Adomatis

Webinars

- **2017 NAR Green REsource Council**
Title: Solar Homes in the Real Estate Market
Panelist: Pamela Brookstein
- **2018 Clean Energy States Alliance**
Title: The Real Estate Industry and Selling Homes with Solar
Panelists: Pamela Brookstein, Janelle McGill (Colorado real estate agent)

8. Path Forward

All three courses will continue beyond the grant period.

Real Estate Class

- The online class for real estate agents will remain on CRD’s [website](#).
- OnCourse Learning plans to launch a new version of the real estate and appraiser courses on their [educational platform](#).
- Elevate’s partner Craig Foley and instructor Jared Priesler will continue to promote and offer the live class in Massachusetts and Utah, respectively.

- Elevate will offer live versions of the class in Chicago and Oklahoma in 2019 and will continue to promote and offer the class across the country.

Appraiser Class

- AI has created an online version of the appraiser class on their [Continuing Education platform](#).
- AI will also promote the live version of the class to their chapters as part of their Home Grown program.
- The five instructors already teaching the live version of the appraiser class agreed to continue promoting and teaching the class. The instructors are based in Florida, Virginia, Utah, California, and Indiana, but also teach in other states.
- OnCourse Learning, though they have not established a date, plan to launch a new version of the real estate and appraiser courses on their [educational platform](#) in 2019.

Appraiser Regulatory Official Class

Elevate will continue to host the recorded webinar for appraiser regulatory officials on its [website](#) and promote it in the Value for High Performance Homes news alert.

9. References

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- 2018 REALTORS® and Sustainability Report
- [Highlights From the Profile of Home Buyers and Sellers](#)
- [Selling the Sun](#)
- [Training Course for Appraisers](#)
- [Free Webinar for Appraiser Regulatory Officials](#)

10. Appendix A: Achieved Accreditation

State	Appraiser Online (*)	Appraiser Live	Real Estate Online	Real Estate Live
Alabama				
Arizona		August-18		
Arkansas	January-19			
California	January-19	May-18		
Colorado	December-18	August-18	March-18	
Connecticut	December-18		February-18	
Delaware	October-18	July-18		
District of Columbia				
Florida		June-18	May-18	
Georgia	December-18		August-18	
Hawaii			May-18	
Illinois		May-18	June-18	
Idaho	December-18			
Indiana	December-18	May-18	November-18	
Iowa	December-18			
Kansas	December-18			
Kentucky				
Louisiana	December-18		June-18	
Maine	December-18			
Maryland	December-18			
Massachusetts		March-18		March-16
Michigan			January-18	
Minnesota	February-19			
Mississippi				
Missouri				
Montana	February-19			
Nebraska				
Nevada	January-19		April-18	
New Jersey		June-18	June-18	
New Mexico			November-18	
New York	December-18	August-18	August-18	
North Dakota	December-18			
Ohio	December-18		April-18	
Oklahoma				February-19
Oregon	December-18	April-18	January-18	
Pennsylvania			July-18	
Rhode Island	December-18	January-18		
South Carolina	December-18		August-18	
South Dakota				
Tennessee			July-18	
Texas	December-18			
Utah		April-18	June-18	December-17
Vermont		January-18		
Virginia	January-19	September-18	March-19	
Washington			November-18	
West Virginia	December-18			
Wisconsin	December-18			
Wyoming	December-18			
	27	15	21	3

(*) Per Appraisal Institute report as of 3/5/2019

11. Appendix B: Task and Milestone Summary

Task and Milestone Summary Table						
Task Number	Task or Subtask Title	Milestone Type (Milestone or Go/No-Go Decision Point)	Milestone Number* (Go/No-Go Decision Point Number)	Milestone Description (Go/No-Go Decision Criteria)	Anticipated Date	Anticipated Quarter
1	Identify Information Gaps to Inform Training Needs	Task	Review existing resources to avoid duplication and learn from other efforts. We will then develop an outline of training needs for real estate agents and appraisers.			
1.1	Project Kick Off	Milestone	1.1.1	Kick Off Meeting minutes and list of stakeholders submitted to DOE	M1	Q1
1.1	Project Kick Off	Milestone	1.1.2	Course proposal submitted to Appraisal Institute	M1	Q1
1.2	Identify MLS PV gaps	Milestone	1.2.1	MLS field recommendations memo created and sent to DOE	M 2	Q1
1.3	Recommend additional PV fields to RESO and CMLS	Milestone	1.3.1	Memo to RESO and CMLS	M 2	Q1
1.3	Report on RESO approval of new fields	Milestone	1.3.2	Memo to DOE with RESO field decision	M 2	Q2
1.4	Review Existing Training Resources	Milestone	1.4.1	Submit summary document to DOE with results of existing training	M 2	Q1
1.5	Identify Topic Areas for Training	Milestone	1.5.1	Submit outline of key topic areas to include in training	M 3	Q1
2	Early Promotion of Trainings	Task	In order to ensure sufficiently broad dissemination of the trainings being developed under this award, preparation and implementation of outreach to relevant audiences must begin early in the project.			
2.1	Establishing the Outreach Framework	Milestone	2.1.1	Appraisal Institute's outreach plan submitted	M 1	Q1
2.1	Establishing the Outreach Framework	Milestone	2.1.2	Submit conference session proposals and attend conferences (3 conferences total)	M 1-12	Q1-Q4
2.1	Establishing the Outreach Framework	Milestone	2.1.3	Submit strategic outreach plan	M 4	Q2
3	Design Training Courses	Task	Design a training course that will emphasize how to identify and interpret key characteristics of systems that impact the contributory value to a property.			
3.1	Design Training Curricula	Milestone	3.1.1	Submit detailed training curricula and metrics for each course to the DOE	M 5	Q2
3.2	SME Review	Milestone	3.2.1	Submit to DOE template review document	M 5	Q2
3.2	SME Review	Milestone	3.2.2	Submit findings of SME review to DOE	M 7	Q3
3.3	Focus Group Curriculum Review	Milestone	3.3.1	Summary of focus group findings to DOE	M 8	Q3

Task and Milestone Summary Table						
Task Number	Task or Subtask Title	Milestone Type (Milestone or Go/No-Go Decision Point)	Milestone Number* (Go/No-Go Decision Point Number)	Milestone Description (Go/No-Go Decision Criteria)	Anticipated Date	Anticipated Quarter
3.4	Storyboarding	Milestone	3.4.1	Storyboards created	M 9	Q3
3.5	Develop Course Metrics and Evaluation Measures	Milestone	3.5.1	Memo to DOE with Course Metrics and Evaluation Measures Created	M 9	Q3
3.6	Storyboard review and feedback	Milestone	3.6.1	Storyboard reviewed, updated and approved by stakeholders	M 10	Q4
4	Storyboards reviewed, updated and approved by stakeholders.	Task	Using completed storyboards, Elevate and its partners will develop the core curriculum components for the online training course for real estate agents.			
4.1	Creation of Online Training for Real Estate Agents	Milestone	4.1.1	Summary of findings from interim review to DOE	M 11	Q4
4.1	Creation of Online Training for Real Estate Agents	Milestone	4.1.2	Beta version administered	M 12	Q4
5	Develop Training Curriculum for Appraisers	Task	The curriculum for the online class will be assembled into a three-hour, self-directed and interactive online class.			
5.1	Creation of Training for Appraisers	Milestone	5.1.1	Summary of findings from review to DOE	M 11	Q4
5.1	Creation of Training for Appraisers	Milestone	5.1.2	Training material for chapters' homegrown seminars is complete and ready to launch	M12	Q4
5.1	Creation of Training for Appraisers	Milestone	5.1.3	Training material for online class is complete and ready to launch	M13	Q5
5.1	Creation of Training for Appraisers	Milestone	5.1.4	Beta version administered	M 13	Q5
6	Setting up the Evaluation of Training Programs	Task	Develop a course evaluation process to determine the overall success and reach of the courses.			
6.1	Confirm Evaluation Metrics	Milestone	6.1.1	Course evaluation metrics approved and confirmed	M 12	Q4
GNG		Go/No-Go	1	Storyboards approved; evaluation metrics established; beta testing successfully administered	M 12	Q4
7	Obtain CE Credit Approvals	Task	Submit the courses for real estate agents for accreditation in as many states as possible (20 to 40 states) to incentivize professionals to participate.			
7.1	Obtain CE Credit Approvals for Real Estate Agents Class	Milestone	7.1.1	Signed Approvals for CE Credits Received	M 22-30	Q8-Q10
7.1	Obtain CE Credit Approvals for Real Estate Agents Class	Milestone	7.1.2	On-line course loaded	M 15-16	Q6
7.2	Obtain CE Credit Approvals for Appraisers - Live	Milestone	7.2.1	Signed Approvals for CE Credits Received - Live	M 16-30	Q6-Q10
7.3	Obtain CE Credit Approvals for Appraisers - Online	Milestone	7.3.1	Signed Approvals for CE Credits Received - Online	M 25-33	Q9-Q11

Task and Milestone Summary Table						
Task Number	Task or Subtask Title	Milestone Type (Milestone or Go/No-Go Decision Point)	Milestone Number* (Go/No-Go Decision Point Number)	Milestone Description (Go/No-Go Decision Criteria)	Anticipated Date	Anticipated Quarter
7.3	Obtain CE Credit Approvals for Appraisers	Milestone	7.3.2	On-line course loaded	M 23-24	Q8
8	Develop Training Curriculum for Appraiser Regulatory Officials	Task	Develop a shorter, one to two-hour overview of proper appraising of PV systems based upon the curriculum developed for appraisers for delivery by webinar to appraiser regulatory officials.			
8.1	Creation of Webinar for Appraiser Regulatory Officials	Milestone	8.1.1	Summary of findings from review and webinar to DOE	M 14	Q5
9	Implementation of Outreach Framework	Task	Promote the classes utilizing existing networks including project partners			
9.1	Offer Trainings	Milestone	9.1.1	Training courses available	M 16-35	Q 6-12
9.1	Offer Trainings	Milestone	9.1.2	Hold live regulator webinars and training at AARO conference	M 16, M 18, M 21	Q 6-7
9.2	Promote Trainings Further	Milestone	9.2.1	Promotion of class through email, newsletters, websites	M 13-35	Q 5-12
10	Evaluate and Improve Training Programs	Task	Elevate will analyze the course evaluation. Any needs for improvement will be compiled in a recommendations report for future course amendments.			
10.1	Evaluate Courses and Knowledge Retention	Milestone	10.1.1	Submit quarterly reports with findings and recommendations	M 16-35	Q 6-12
10.2	Update Courses as Needed Based on Evaluation Feedback	Milestone	10.2.1	Submit summary reports with any amendment to courses due to evaluation results	M 16-35	Q 6-12
11	Program Sustainability	Task	Identify, secure, and implement options to ensure that the courses can be sustained beyond the grant period			
11.1	Develop options for program sustainability	Milestone	11.1.1	Summary of options for program sustainability provided to DOE	M 16-18	Q6
11.2	Analyze feasibility of options	Milestone	11.2.1	Analysis of options for program sustainability provided to DOE	M 19-24	Q8
11.2	Analyze feasibility of options	Milestone	11.2.2	Secure appraiser school to support class accreditation	M 25-30	Q10
11.3	Select most feasible option and program transition	Milestone	11.3.1	Transition plan to selected organization using selected model(s)	M 31-35	Q12