Streamlining Solar Permitting with SolarAPP+ Webinar – Text Version

Here is the transcript of the webinar "Streamlining Solar Permitting with SolarAPP+," presented in April 2021 by the Solar Energy Technologies Office of the U.S. Department of Energy.

Becca Jones-Albertus:
Good afternoon or good morning, depending where you are, and welcome to Solar Energy Technologies Office webinar "Streamlining Solar Permitting with SolarAPP." I'm Becca Jones-Albertus, the director of the Solar Energy Technologies Office, very pleased to be here today with Jeff Cook, our SolarAPP project lead in the National Renewable Energy Laboratory, and Abby Hopper, president and CEO of the Solar Energy Industries Association. I think just to start with a bit of housekeeping logistics, we will be recording this session and it will be available on our website afterwards, Energy.gov/seto-webinars. So you will be able to also access all the links that are here within the presentation afterward. and we will also be taking questions at the end, so you're welcome to put those in the chat at any time during the webinar. We'll get to them toward the end.

So just as we begin, just quickly I'll give a little bit of overview on the Solar Energy Technologies Office. Our mission is to accelerate the advancement and deployment of solar technology to support an equitable transition to a decarbonized world. We're focused very much on President Biden's goal of decarbonizing the electricity sector by 2035 and the full energy system by 2050. Our work advances solar technology and drives soft cost reduction to make solar more affordable and accessible to all Americans. We work to integrate solar into the grid and with other technologies so that solar can support the reliability and security of our electricity grid, as well as pair with energy storage to enhance community resilience. And above all these things, as we look to grow the solar industry we look to increase the benefits that can come to our country from solar including job growth, U.S. manufacturing, and environmental benefits, and thinking about the full life cycle of technology deployment.

Our office has five program areas. We focus on advancing both photovoltaic and concentrating solar thermal power. In both of those programs we're looking to advance technology to improve performance and lifetime and overall reduced costs. We have a soft cost reduction program that's focused on a lot of the human costs of solar deployment, from siting, permitting, interconnection, inspection, financing, customer acquisition, how we create information, bring people together, develop tools like SolarAPP that we're going to be talking about today, to lower those stop costs and make solar more accessible to all Americans. Our systems integration team is where we focus on integrating solar more seamlessly into the electricity grid and developing the experience that's needed for solar technologies to support the grid's reliability and security and enhanced resilience. And our manufacturing and competitiveness efforts are supporting U.S. businesses that are developing new solar products, especially products that can be manufactured and grow the manufacturing base in the United States.

So reaching the president's 2035 decarbonization goal for the electricity grid is going to require a big role from solar. Solar we would expect would need to supply 30 to 50 percent of our nation's

electricity, up from just 3 percent today. There's a lot of work that needs to get that to get us there. We need to drive down the cost of solar by another 60 percent to make solar affordable across the country and in different market segments. We need a lot more experience using our solar plants to support the reliability, the resilience, and the security of the grid as I mentioned. We need to address energy justice issues to ensure equitable access to the economic and environmental benefits of solar to all Americans, especially those who need those benefits most. And related to why we're here today, we need to make solar deployment faster so we can deploy two to five times more solar each year than we've been deploying the last several years.

So before we get into talking more specifically about how we're going to make deployment faster, I'm gonna just share some information about some other activities in our office just for general awareness. We have two prize competitions that are open. Our Perovskite Startup Prize and the second round of our Solar Desalination Prize. You can find more information on our website about webinars to get involved. And applications are due June 30 for the Perovskite Startup Prize and July 15 for the Solar Desalination Prize second round. And we also want to make you aware of another great webinar that we have on Tuesday at 11 a.m. Eastern time where we're going to be talking more about the justice, equity, diversity, and inclusion in the solar industry. We'll have Abby with us again. And talking about a different set of exciting programs in our office and work which we want to engage with a wide variety of stakeholders to help us plan future work in the space, as well. We're also having at two o'clock that day the informational webinar on the solar desalination price and how you can get involved.

So when we talk about how we can accelerate deployment, one important part of that is making all of the steps in the process of deploying solar faster. This includes what you see up here, permitting, installation, inspection, interconnection. And there's costs associated with each of these steps. So it's not just about reducing the time; it's also about how this time is costly as well. And just one piece of those costs, one way of looking at this is, if you think about just every solar energy system that comes online being delayed just by one day, the value of that electricity that's lost in that delay for getting that system online is almost five million dollars each day for all the solar that's that we're putting online. So we want to be really focusing on how we get cost down, how we get these time and steps much faster. When we think about residential rooftop PV, we have a cost target of getting to five cents a kilowatt hour for residential solar to really unlock growth in this market segment. In 2019 we were about 15 cents. And getting there, almost half of what we need to get there is in this blue bin here, reducing the upfront soft costs. These are the permitting, the interconnection, inspection, the customer acquisition. It's a really huge part of what we need to do to reach our cost targets to unlock deployment and to speed deployment.

So we've been working to speed these processes, develop more effective processes, to drive down solar soft costs for more than a decade. We've been funding projects, developing resources, bringing stakeholders together to develop best practices, to provide training to provide technical assistance. One of the key programs we have in this space is our SolSmart program. SolSmart provides technical assistance to local governments that are looking to make it easier and faster to go solar in their communities, and provide these communities assistance of taking these necessary steps and let them recognize recognizes what they've done with gold, silver, and bronze designation. So as of this month we have over 400 communities that have been designated and so that's really helping us make great progress. But we have such a way to go to

get to our goals. And that's why I'm really excited to be here today to talk with all of you about a new tool to further drive down solar soft costs and speed processes. And that SolarAPP.

SolarAPP is a tool that's being developed by the National Renewable Energy Laboratory, NREL, in partnership with SEIA and many of the other partners that are shown here. It's an online platform to streamline and automate residential solar permitting. And that's going to be the focus here about the rest of our webinar today. We're really excited about this tool and what it can offer all of you. And so we're going to really dive in and share that with you. So to get us started we're going to play a short video, introduce the tool.

Video audio:
On average it takes a week or longer to receive approval on a new solar project in the U.S. Until now. The National Renewable Energy Laboratory's SolarAPP is a free online platform that completely automates the permitting process for residential rooftop solar. The app standardizes requirements and checks for safety and compliance on the spot to instantly catch code issues, typos, and errors. Overall it cuts down the permitting process by at least 5 to 10 business days. This means less waiting and more solar.

Becca Jones-Albertus:
All right, so I'm very excited to welcome Jeff Cook, renewable energy policy and market analyst at NREL, who's been leading work developing SolarAPP. Jeff's been at NREL almost seven years working on state and local policy analysis, and other soft cost reduction opportunities. So welcome, Jeff. Can you tell us what is automated permitting? Tell us a little bit more about what that means.

Jeff Cook:
Yeah, happy to do that. So what we mean by automated permitting is really two-fold. So ultimately what the SolarAPP+ does is it takes a variety of inputs from the contractor relating to a design and then the software reviews those inputs for code compliance, and assuming that the product, the design, is code-compliant, then the application will instantly issue the permit to that entity or that contractor. If it's not code-compliant, they get told immediately why it isn't, how they can fix it, and then they can go ahead and make those revisions to submit it and get that instant permit. And so that's really what we mean by that automated permitting.

Becca Jones-Albertus:
And we're now on the pilot stage for SolarAPP, so can you tell us about who's in the pilot and what specifically you're testing?

Jeff Cook:
Yeah, happy to do that. We're really excited that we've been, our first phase of piloters included Pima County, Arizona; Tucson, Arizona; and then Pleasant Hill, California. So multiple states showing that that the SolarAPP can be used not just in one state like California where you see a lot of solar but also other states and across the country in general. So for our piloting communities, they were really the pioneers of SolarAPP, willing to work with us to functionally change how we do permitting in the country today, right. And so they helped us to make sure that we got through all the kinks of for example integrating our softwares to work together. For

example, solar Pima County and Tucson, of course, have their online permitting processes already, and so we wanted to make sure SolarAPP could align and work with their systems. And so those communities have helped us to improve the application for our second phase of piloting communities that are already starting to adopt or running permits, like Menifee, California. And so those jurisdictions are benefiting from all the great work that we found and learned in the first phase. And of course, then everyone can adopt upcoming in the summer with a fully complete and ready to go product.

Becca Jones-Albertus:
Great. So I think we saw on the last slide the large number of partners that are helping to develop this tool. Can you tell us more about who's involved and what their roles have been?

Jeff Cook:
Absolutely. The SolarAPP was a a big task, so certainly there were some examples that we used as models out in the field. For example, Los Angeles and Las Vegas, two very big communities with a lot of solar, have done this for years. However, it took them a lot of time and resources to get to where they are. And so it was a big effort for the SolarAPP to make that example of Las Vegas and Los Angeles applicable nationwide. And so in order to do that, we needed to develop a diverse SolarAPP coalition, which included, of course, all of the code development agencies at the heart of the application and the code compliance checks that we're doing. So folks like the International Code Council, the National Fire Protection Association, which developed some of those key model codes, were critical partners, in addition to other local governments, of course, that implement all that code. So not just the communities you heard about piloting but other communities that have been involved since the beginning as well, and their staff and staff at Oceanside California; Bakersfield, California; and elsewhere. And then finally and not least, of course, the industry. Contractors that of course would be the users of the application. I can't say enough about the Solar Energy Industries Association and their involvement in this work along with folks like Tesla and Sunrun, which have been critical partners to make sure we validate the software as well. And we actually can announce a new partner on the government software side with Isella, that's just put out a release today about our partnership. And so that shows the other part of it. So we've got the code entities, local governments, their software providers and those organizations like Isella, and then ultimately the industry to come at this problem collaboratively so we can solve it most effectively. And so that's been a great part of this collaborative effort.

Becca Jones-Albertus:
That's fantastic. Now one of my favorite parts of the solar industry is how innovative it is and how rapidly it changes, but when it comes to an automated tool that doesn't make things easy. So how's SolarAPP going to keep up with the rapid changes in the industry?

Jeff Cook:
Yeah, great question. We're really excited that we started with where the market is today. So residential rooftop PV is just growing exponentially across the country. And so we started with that, and we started with the model codes for which most of the country is using. That's the 2017 National Electrical Code and the 2018 International Building and Residential Codes. And so we started there. And as you of course know, and the rest of this everyone on this call knows, that we're moving rapidly forward to incorporate not just having rooftop solar but solar and storage.

Electric vehicle charging infrastructure. You've heard a lot about integrated rooftop PV products. In addition to a whole host of other technologies that we haven't even talked about yet that are certainly coming. In addition to code, model codes that are also being adopted or being developed to actually make sure that all the technologies that are coming onto the market are actually installed safely. And because of course public health and safety is of utmost importance for all of these technologies despite the benefits they may offer. And so ultimately the application is designed to work and follow the industry going forward and also ultimately get ahead of the industry, such that we are ready when new technologies come into play. But you've got to start somewhere. So we started with residential PV. But I'm very excited to say the next application is going to be residential PV and storage. And so we've already done a proof of concept. We've ran an actual permit, automated the whole process for storage in both Pima County, Tucson, and Pleasant Hill, California. And so we've shown that it's possible to do. We're now working with all of our partners, our code entities, local governments, etc., to actually make sure we all feel that those -- every storage project that goes through would, of course, be code-compliant. And so we're vetting those requirements now. But the important thing was to show it could actually work. And of course, the next phase is to continue to update the application for the next round of model codes, the 2020 2021 vintages. and the tool and our team is designed and working to to update the SolarAPP every day. we just put out a new release of the software last week and we'll continue to do that going forward. so stay tuned for updates on our new features including storage.

Becca Jones-Albertus:
Great. Just as innovative as the industry. So you mentioned Pima County as one of the entities who's been piloting SolarAPP. We now get to hear a little bit from Carla Blackwell from Pima County, Arizona, who we had the pleasure to talk with, and can hear a little bit more from her about her experience with SolarAPP.

Carla Blackwell speaking in video:
Since the mid-2000s, both Pima County and the city of Tucson have been extremely aggressive in trying to promote solar in our region. We are ideal for being a big producer of solar energy. I think solar is important to us because climate change especially for the southwest region is a huge threat to our economic vitality. Between the city of Tucson and unincorporated Pima County, we're about a million people in population. We were being just inundated with solar permits, and they were sitting in front of a lot of much more complex building permits and commercial permits that we needed to get out the door. It was fortuitous timing that the folks from SolarAPP were looking for people to participate in a pilot. And SolarAPP is going to lead to same-day permitting. For Pima County before SolarAPP, it would be basically a five-day process for us. With the city of Tucson it was several weeks. A more automated review, that will be huge for us. We're looking at a 90 reduction in the solar permits that we have to touch in the process. I think the biggest benefit for the solar installers and contractors will be the reduction in time. From application or even sales with their customer to installation will be reduced tremendously and we're already seeing that.

Becca Jones-Albertus:
Well, those are some exciting numbers, cutting permit times from five days or several weeks to

one-day turnaround. Those are some great benefits. So Jeff, any thoughts on how we're gonna replicate this work in in more communities?

Jeff Cook:
Yeah, and I can't say enough about how important the involvement of Carla Blackwell, Daniel Ice and the whole Pima team has been in delivering a successful pilot and working with us to address, you know, all of the issues you have with the first pilot. You never know what's going to come up in those things. And they've been really our chief problem solvers to help us ultimately move forward and develop a product that is applicable and useful to everyone. And I'm not sure I mentioned that I can't -- of course, have to also say Tucson and Pima or Pleasant Hill, of course, were very important partners in all of that, as well. So how do we replicate this and make it more successful everywhere? There's a couple of key things that we're really excited about that we learned from the pilots. First of all, these pilot communities were our first, our most critical feedback mechanisms, really. They kept bringing back to us, why can't you permit this in your system? Why can't you permit that in your system? Can we bring in some of this? Why aren't you talking to the utilities to streamline some of the stuff that the utility might be doing that's not efficient or doesn't appear to be necessary? And so they've been really pushing us and helping us to develop a product that is more useful and applicable across the country. And so some of the software updates I mentioned that we just pushed were a part of the reason, or part of from the community's firsthand discussion of it, in addition to what the contractors were saying. But as far as how we replicate this going forward, there's a couple of great ways to do that. Beyond just improving the software, which we've already done, the other part is, as I've mentioned, we've already partnered with Isella, one of the leading government software vendors. They've actually developed a template for all jurisdictions, all of the sellers client customer base, can adopt what Pima's done. So Pima had to do it all themselves.

Now Isella's developed a process in partnership with SolarAPP where any jurisdiction that uses their system could turn SolarAPP on, ultimately as soon as tomorrow, right. If they wanted to start piloting they could do that. And that's a critical way for us to scale, because a lot of jurisdictions use software today just like Pima County, Tucson, and Pleasant Hill do. And no jurisdiction, and I would agree with them, want a hundred different softwares that they're using, right. Or tell a contractor, for this permit you have to go to this system, and for that permit you go over there, right. Nobody wants a situation like that. And so the partnership with Isella and other government software vendors that we have has been really valuable in order to ultimately make this product available to more people a lot faster. And so ultimately, we're looking forward to that future.

In addition, as I've mentioned, the key point is the whole industry is moving forward, right. And in a lot of jurisdictions, in California, for example, it used to be like just a few months ago that solar was a standalone product. And now with a lot of the issues they've been having with wildfires, for example, basically the market has switched overnight and everyone wants solar and storage. For a lot of really good reasons, right. For backup power, whatever. So making sure that the SolarAPP serves those communities with that technologies that they want is the other critical piece. And so when we go launch this summer, we'll have all of those elements in place to really serve everybody's needs. And it should end up being a win-win for everybody. As you said, we're rapidly reducing, you know, cycle times from I would say five business days is on the

lower end. Pima County actually is doing pretty well when the best practice is three business days, but there are a lot of jurisdictions like Tucson where it can be 20-plus business days. You're talking two months to get that permit. And SolarAPP can address all of that and make it instantaneous. And it's a win-win for everybody.

Becca Jones-Albertus:
Great. I know folks we have listening are asking, well, how do I sign up? How do I get involved? I want -- sounds great, fine, sign me up. So how can people get involved and when can they sign up?

Jeff Cook:
Yeah, they can start signing up now. They can register at solarapp.nrel.gov as a jurisdiction or a contractor. If you're a manufacturer or some other code entity or subject matter expert and you want to get involved in some of the code development and implementation pieces of SolarAPP, by all means reach out to us at solarapp.nrel.gov, or through our contact form on the website, and we can get in touch with you by that means. But certainly any jurisdiction interested in piloting, we can start you off tomorrow, especially if you're a solar customer -- we could turn it on before this webinar was over, basically. So please do reach out to us. We're here ready to help.

Becca Jones-Albertus:
Well, thanks so much, Jeff, for all the great work you're doing, for being here today. We'll come back to you when we get to the Q&A. But now we're going to take a few minutes and hear more about why this SolarAPP is so important to the solar industry. And so I want to introduce Abigail Ross Hopper, president and CEO of Solar Energy Industries Association or SEIA, which is the national trade association for the U.S. solar and storage industry. SEIA has about a thousand member companies and is working to advance policies on behalf of those members. So Abby, welcome.

Abby Hopper:
Thank-you. I'm glad to be here, Becca.

Becca Jones-Albertus:
So you joined SEIA in 2017 after working at Ocean Energy, Department of Interior, and as director of the Maryland Energy Association. So why solar?

Abby Hopper:
Well, you said it earlier, right. You're impressed and love the entrepreneurial nature and the way that this business model and this technology constantly evolves and innovates. And that's honestly what attracted me to solar. It was that -- I mean, in 2020 we were a 24 billion dollar industry, but it still feels incredibly entrepreneurial, and like we're just the beginning of this incredible growth trajectory. And I, like many people, I recognized that in 2017, and thought I want to get on that train. So here I am.

Becca Jones-Albertus:
Fun train it has been and will continue to be. So you know, we're talking about soft cost, the burden that they bring to the industry, to consumers, to local and state governments. So can you

tell us a little bit more from the industry's perspective, what are the challenges that are being faced in reducing stock costs, especially permitting costs?

Abby Hopper:
Yeah, no, it's a -- this is a really important topic. And I'm really so appreciative of the Department of Energy and NREL for really leading on this. We gathered all -- not all. We gathered about 100 solar thought leaders and executives and sort of folks, I guess, about a year and a half ago and said, OK, if we want to make huge transformational progress in the solar industry, what are the opportunities and what are the barriers, right? And one of the barriers that came up again and again and again, especially in the residential space, was soft costs, right. It's something -- there's 15,000 different jurisdictions. Everyone has their little bit different interpretation. Some are extremely well-versed and experienced. Others are not so much. Some, it's a huge priority. Some, it's at the bottom of the list. And that surveillancy amongst the country and the wait times. I mean, that graph you had that showed it's five percent, five cents of the cost is really significant. And so as we thought about -- you know, I spend a lot of my time lobbying for policy change. But this isn't a policy change, really, right. This is a -- this is a tool that cities and towns and counties can use and installers can use to cut red tape, cut permitting, and actually bring a lot of benefits, right. It's not -- it's not merely taking away things. It's actually adding a lot of value, right. Adding consistency and certainty and clarity. So on the behalf of building inspectors, they can be comfortable that this is all happening. So that's why it's so important to us. I mean, you know, I'm gonna lobby all day long for tax policy and trade policy and all those things, but to be able to articulate a tool that, you know, the government in partnership with industry has helped to create that cuts costs, that's a pretty great thing to be able to accomplish. So congratulations.

Becca Jones-Albertus:
Well, I think the great success of SolarAPP has been its just tremendous partnership between so many different entities, all the relevant entities involved. And I know at DOE when we're putting together new tools and working on new projects, the most impact we can have is when we have all of the stakeholders who are needed to move something forward working together and meeting, developing tools that meet all of their needs. And SolarAPP has been really exciting from that perspective and its ability to bring together industry, local governments, software providers, and our expertise at the national labs.

Abby Hopper:
We should underscore the local governments. I mean, that, you know, a lot of these ones that are piloting are really taking a risk and that leadership is much, much appreciated.

Becca Jones-Albertus:
Yes, so you know, we've been talking at Department of Energy about the ambitious goals that the president has set for 2035, decarbonizing the energy sector, and how, you know, to get to 100 percent clean energy, solar needs to grow two to five times faster than it's growing today. And we're gonna, you know, be looking at not just the hundred gigawatt milestone we're approaching today for solar deployment, but how do we get to hundreds of gigawatts and terrawatts. And I know that that SEIA also has very ambitious goals for the next decade. so you know, how do you want to say a little bit about how SolarAPP?

Abby Hopper:
Absolutely, I do, and I also want to acknowledge that we all have people interrupt our presentations. As another mom of three. So yeah, we set a goal in September of 2019 to that we wanna -- you talked about solar going from three percent-ish of where we are now. Our goal was 20 percent by 2030. I can tell you when I rolled that out to our industry in September of 2019, there were some who thought that was a bit ambitious and they're like, what are you talking about, Abby. We're now in the process of reevaluating that goal, because in a year and a half the world has changed so dramatically and what seemed relatively audacious now seems somewhat conservative. And so hopefully we will be discussing an even bigger goal, because as you said, to meet the president's climate goals and job goals and sort of all of these other things that he has set for us, we have to deploy a lot faster. And so I think that we will -- you know, SolarAPP is one way to do that. There's a whole bunch of other things. And they're not all -- some are pieces of legislation but a lot of them are, you know, things like workforce development and making sure we have the right people in place and ready to do the work somewhere around land use, right, and making sure that we're good stewards of lands and good neighbors. And so there's -- I sort of talk about it as like, you know, nice problems to have because we're growing so quickly. We can anticipate where we might have some pain points and resolve those early on. But it is absolutely incredibly exciting time to be in this industry.

Becca Jones-Albertus:
Yes and yes. And SolarAPP is such an important tool, but as you touched on, we need to be making progress in so many different pieces of this puzzle. So it's really fun to be talking about one of those and then thinking about all of the other big big projects we're going to be taking on to accelerate solar deployment going forward. Well, I think at this point we will bring Jeff back up along with Abby, and we're going we want to take some questions from the audience.

Susanna:
Yeah, we've gotten a bunch of questions. One here -- a few have come in that are curious about the connection between SolarAPP and SolSmart. Can you, Becca, talk a little bit about the SolSmart program and how the communities that they work with might be able to use SolarAPP?

Becca Jones-Albertus:
Absolutely. Yeah, so SolSmart has been one of our programs that is in its fifth year, and it has been working, providing close technical assistance to local governments about how they can make it easier and faster to go solar in their communities. So there's a big emphasis on permitting as well as inspection, as well as, you know, other steps that local governments can take. So we see SolarAPP as being a very important tool that can become part of what, you know, is the suite of steps that that SolSmart works with local governments to help them take. And so these -- we see SolSmart and SolarAPP as being very, very complementary and things that'll work together really well. And obviously we're expecting SolarAPP to really help these local governments make very big strides towards the goals that we have with SolSmart.

Jeff Cook:
And I could add a couple of points to that. And we're really excited to work with the solar foundation, of course the lead on the on SolSmart, as well. So they are a critical member of the SolarAPP program, in addition to IREC, of course that also is leading that effort. And so one of

the exciting things, just to reemphasize even what Becca was saying, is that to get gold designation -- you saw, I think there's about 100 communities that have gotten that. Certainly thousands more communities could get gold. And a good fast way to get there is to develop an automated instant online process that can help you get that gold certification. And so it's a free way to do that is to adopt SolarAPPs. So it should make it a lot easier for jurisdictions to improve their processes in a great way or significant way and get designated for it.

Susanna:
And another question is about the scope of the SolarAPP. Are there any plans to apply this to larger-scale solar projects? This person understands that it might not be end-to-end automated, but is there a way that this tool can help streamline the commercial utility scale permitting process?

Jeff Cook:
Yeah, great question. So yeah, as I've said before, right now we are focused on the residential side, residential rooftop PV. And so like I said, we've started there, in part because those are easier systems to review from a code compliance perspective than when you get into those larger-scale commercial or utility or industry scale, you know, rooftop projects or ground mounts or ultimately into utility scale. And so we are of course very interested to expand the application into that commercial and industrial space starting in rooftop, because it's most similar to what we're already doing on the residential rooftop side. And so at this point on the commercial side, of course SEIA and Abby's team is working with us to think through what that would look like and when to put that on our product roadmap. But I guess the call to action would be for any partners, interested partners on the call that are working in those spaces, we're very interested to hear from you about how we could develop such a system that could do that permitting effectively. And so yeah, I put that call out to folks to reach out to me and the team. And we can get you involved and hopefully deploy that kind of functionality a lot sooner.

Susanna:
And similarly what about off-grid solar and storage? Is there a plan to tackle that?

Jeff Cook:
Yeah, so we could both off-grid, I'll put into a bucket too with new construction. So currently we are focused on residential retrofit systems. And so we are -- of course, new construction is probably the next thing on our list. But as far as off-grid technologies, that would probably be significantly further down the list. And that's just functionally about volume, right. So there's just a lot more folks that are doing solar and storage and interconnecting it with the grid than there are folks that are off-grid in those applications. So part of it is just trying to meet the market where it is today. But we want in the future, you know, 10 years from now maybe we are all off-grid and have our own power systems, and SolarAPP has been saying no to that kind of future. Ultimately we're just staging our software to be able to meet the most systems where they are today, to help jurisdictions with the backlogs that they're facing today.

Susanna:
And so the one question here is about how long it takes to get a permit, and he's asking what is

the main holdup? Local governments, utilities, interconnection? What's at the source of the time it takes to get a panel permitted?

Jeff Cook:
Yeah, and I'm happy to kick that one off and I don't know too, Abby, if you want to chime in. But I'm really excited to say that we have a tool that can help tell you how long it's going to take to get something permitted, inspected, or interconnected. And that also happens to be on the SolarAPP website. It's Solar TRACE -- it's our time-based residential analytics and cycle time estimator. And it'll tell you for 740 jurisdictions about how long it's going to take to get that permit, and sometimes it takes months, right, and people need to be ready for that process, because you can't start an install until you're permitted, right. And it just reflects the issues at play there. But yeah, so I'll pause there for a second and let Abby chime in too if she wants to speak to the industry perspective of some of the issues that that really causes.

Abby Hopper:
Thanks, Jeff, and that's a great tool on the website. But to why, right, like why do some of them take months, you know, I think there are -- there's a variety of reasons, including just funding, right. As certain jurisdictions, their building inspection offices are not funded to the degree that they need to be in order to allow efficient evaluations. I think some is prioritization, right, if they're prioritizing other kinds of structures before solar projects. I think some is experience, right, because you talked about Las Vegas and LA, right. They've done a lot of them. If this is something where it's relatively new adoption in that community, there's a learning curve and that takes some time. We obviously -- I'm pointing at my roof. Certainly during COVID everyone -- the way everyone worked changed pretty dramatically. That actually had some positive impact in terms of getting people a little bit more comfortable with remote inspections, but it also slowed down processes, as well. So I don't think there's one single reason, but I think, you know, that tool on the website will show you the variation and why it's such a gaining factor in so many places.

Susanna:
And in the same vein we have another question here, is how do we avoid the accumulation of rules, such that rules are so restrictive that progress is impeded? In other words does every AHA take the rules?

Jeff Cook:
I think I caught most of that so I can get us started, and we can, yeah, hopefully get Susanna back. But ultimately that's part of what the Solar TRACE tool also shows, is the variation in requirements across the country, which Abby was pointing to can also influence the cycle time. What types of reviews do you require, how consistent are you in those reviews, how clear it is to the contractor what you're asking for. And it's not just for permitting; that's on inspection and interconnection. So you could even streamline permitting but if the interconnection process still takes months, you're still in the same problem you were before, because those things can happen in some cases concurrently. But ultimately how do we improve process? One of the ways to do that is to tell jurisdictions how they could do things better. Part of that is SolSmart. SolSmart has a whole checklist of things you could do to improve. Because a lot of jurisdictions functionally don't have the time or capacity to be keeping up on solar code necessarily. As Carla was

mentioning in the call or her video, that they have a ton of permits that they have to look at that have nothing to do with solar at any point in time. So they can't just be focused 100 percent on keeping up to date with solar. Rather that's what the industry and the code officials are all designed to do, is to develop model codes that actually are up to date for the technologies in place such that the jurisdiction can feel confident in just following those codes, which those code experts have developed in a collaborative process. And so the SolarAPP is designed around as I said the 2017 and '18 vintages of those model codes. We're moving forward to follow the rest of the model codes going forward. And that is a way for jurisdictions to improve immediately, right. A lot of jurisdictions are still on 2014, 2008, I heard, of these older model codes, which don't reflect the industry and the technologies you see in the market today. Yes, I'll pause there, Abby, if you want to chime in, as well.

Abby Hopper:
No, I think you covered that.

Susanna:
Hopefully we'll get Abby back -- there she is. Sorry, I think we missed part of your response there. ... OK, so another question here is pretty technical: Is SolarAPP code compliant with ICC 2018?

Jeff Cook:
Yeah, so, I mean, there's a couple of couple of important notes to clarify there. So ICC developed the 2018 International Building Code and the 2018 International Residential Code. SolarAPP is compliant with both of those codes for the solar elements of those codes. And so yes. And then for -- ICC has already adopted 2021 series for those same codes. We're working to adopt those as well, or integrate those into the software. So we are fully embedding all of that. We are not necessarily going backwards in code, because I've already mentioned, the whole point of improving or updating the model codes is to make sure that they are up to date with technology, ensuring it's safe and code compliant from a public health and safety perspective. And so we're moving forward with the code, not necessarily backwards.

Susanna:
And can you talk a little bit about what the business certainty means for the solar industry that the SolarAPP brings?

Jeff Cook:
Yeah, absolutely, and I'd love to key that one up probably for Abby I think you're the best one to answer that, and I can chime in after.

Abby Hopper:
I'm happy to. So you know, any business and whether they're a two-person installation company or a 5,000-person utility solar company, needs a certainty, right. They need to understand what the rules are, what's expected of them, so they can figure out how to allocate their resources, whether that resource is cash, time, personnel, tools, right, like literally whatever the resource is. And so unders -- and that is, you know, if you look -- if you think about that graph that Becca showed where the permitting was five cents of the price, it's because you have to build in all of

that uncertainty, right. You don't know if the inspector -- if you're going to process in a week or a month. You don't know if that person who takes a month is going to then cancel their contract. And so all those costs of customer acquisition for that customer who's now canceled are sort of built in, you know -- you have to put them back into your overhead for the rest of your customers. And so having that certainty is going to be rather transformational for businesses, because again, they can know all right, well, I know I'm going to get my permit on Monday, I can roll my truck on Tuesday, I can have the first payment from my customer on Wednesday, right. And that's a really different model than I don't know when it will happen.

Susanna:
And what are the barriers to adoption by large cities with municipal utilities? This person asked when someone in Texas if they were participating and got a flat no with no comment. And is there any information about promoting SolarAPP in Texas or in other sort of large cities?

Jeff Cook:
Yeah, well, I hope I didn't hear in there that they got a flat no, they can't work with SolarAPP, because that is definitely not the messaging we're putting out. We are happy to work with any jurisdiction that comes to us that's curious about how to work with SolarAPP. It's possible that we ultimately can't have our softwares work together or something like that. But there should be no flat notes for anybody; hopefully that wasn't on the SolarAPP side. But the question is valid in terms of the municipal utility perspective. And actually we think that that's a great use case. So for example, right now we worked with Pima County in Tucson and Tucson Electric Power, which is the utility serving the majority of the customers in that area, to think through how they can benefit from SolarAPP and the compliance check and works that SolarAPP is doing to help streamline some of the stuff that the utility was asking for. And the utility has accepted and changed some of their processes, and those -- I'm not sure that they've been formally rolled out, all of them have been rolled out yet. But we've actually made some changes with Tucson as a partner to streamline some of that after they saw what SolarAPP was doing. So that's a big deal, right. That shows how SolarAPP isn't just focusing on permitting or even inspection, but it's actually helping across the process. And when a utility is within the municipality, it can also almost be easier. Of course, they can be independent departments and separated independently from each other in terms of organizational structure, but ultimately they still can see each other when we're back in real offices again. You know, you can walk over to where the utility office folks are sitting and ask questions and interact with them. And so we actually think a muni utility perspective and a jurisdiction that wants to adopt it on permitting, there's actually some great synergies we could have there to embed both the permitting and interconnection processes together. And we'd love to to do a pilot or case study of that with a interested, you know, jurisdiction and utility pairing. And we've certainly talked with some already. We'd be happy to talk more about that in the context of Texas, then we're certainly talking to other jurisdictions in Texas, as well, that would be interested. So definitely interested in engaging in that.

Susanna:
And what about permitting fees? Does it attempt to have a uniform permitting fee?

Jeff Cook:
Right, so SolarAPP does not take a position on permitting fees at current. I know Abby and

Becca may have different positions on permitting fees and how they're set up today. So I can say that the Solar TRACE tool does identify average permitting fees that we know across jurisdictions. But SolarAPP is designed to allow and accommodate for jurisdictions' permitting fees as they stand today. So ultimately for any project that goes through SolarAPP, the jurisdiction, if they had a hundred dollar permit fee they get a hundred dollars for every application every time. And it's up to the jurisdiction to make decisions about their fees. I will say SolarAPP is doing plan review on their behalf, and some jurisdictions we've talked to have also said that they are interested in changing their fee structure because they're no longer doing plan review. Again, totally a voluntary thing for the jurisdictions to decide. SolarAPP+ will work with their fees as they are designed now.

Susanna:
So will -- can or will the SolarAPP feed data into fire or other safety departments? And what are other safety considerations that the SolarAPP helps to tackle?

Jeff Cook:
Great critical questions. In fact the SolarAPP isn't just -- some folks actually have more than one permit. So there's not just a solar permit; there's a fire permit, there's a building permit, there's a structural permit, and you have to get separate ones for your solar project in some places, right. So SolarAPP takes all of those permits and all of those calculations and considerations and puts it into one SolarAPP permit. And so ultimately to do that we've collaborated in some jurisdictions that we're speaking with, they do it that way, where fire looks at it separately from the building department. And so we've worked with them collaboratively to get and to ensure for the fire department, get them comfortable, that the fire requirements embedded in the SolarAPP meet the requirements that they would otherwise be looking for. And so within jurisdictions like that, it is a sometimes a wide net of decision-makers that you need to include in these conversations. But ultimately SolarAPP does do structural, fire, and electrical compliance checks in accordance with the model codes, and delivers safe code compliance systems that so far have passed their inspection on the first time every time for all of our pilot projects. And that's a really big big deal.

Susanna:
This is a question I think outside of the SolarAPP, but Becca maybe you can tackle it. It's: Wouldn't community solar installations be a quicker way to ramp up renewable implementation rather than house-by-house installation?

Becca Jones-Albertus:
As we look to grow solar around the country, we want to grow all market segments. And there are different ways that all market segments, you know, make sense for different customer bases. And so community solar is a really important part of our portfolio at DOE and a really important model for solar deployment, but rooftop solar offers a lot of options, as well, for individual homeowners who want their own ability to control their electricity supply, to have local resilience to access some of the economic benefits. And community solar is not yet available everywhere, though we're working very hard through our National Community Solar Partnership to have it become an option for all Americans, to save money on their energy bills. But again both very, very important models for growing solar.

Susanna:
And Jeff, can you provide -- can you just list who, what communities are actually using in the pilot? I'm not sure if that information is public or not, but I've had several people request that information.

Jeff Cook:
Oh yeah, absolutely, and I can take this time as well to say NREL's a very proud supporter of the National Community Solar Partnership and we're working hand-in-hand with the Solar office to help move that market forward, as well. And in the future hopefully SolarAPP can help with permitting on community solar, as well, so that's really exciting. As to the piloting communities, as I've mentioned, it's Pleasant Hill, California; Pima County, Arizona; Tucson, Arizona; and now Menifee, California just ran their first permit last week. We have jurisdictions in Colorado, Maryland, and California that are in various phases of piloting but have not yet run a permit. And so we're not announcing until they have. And so there's about 20 more jurisdictions in that department, and about 100 to 150 that are evaluating and testing the application for further reviews. So we are moving really fast here at the SolarAPP. But it just takes time for jurisdictions to feel comfortable and adopt. And I totally understand that.

Susanna:
So I think we have time for one or two more questions. This one is about IT departments at cities. Has there been a willingness or hesitancy from those IT departments to adopt SolarAPP? And I think related, there's been several questions around what kind of data are is it collecting, and how is it in -- is it sharing things like the manufacturer of the solar panel?

Jeff Cook:
Yeah, all great questions. And so the SolarAPP is designed in two ways. So there's the standalone version of the SolarAPP. So you can adopt and have SolarAPP run permits on your behalf. And then the second part is the integrated version, where SolarAPP does the automated plan review within your software like Othello, the system I'd mentioned previously. So in both of those situations there's always going to be cyber-security concerns. And they're valid. And so of course, the SolarAPP is designed to the requirements of the Department of Energy in terms of cyber-security, although of course, we've had breaches across the federal government, as well. Ultimately it is a conversation with each jurisdiction department to get them comfortable. But importantly, SolarAPP can be designed such that there are no connections, no additional openings or gateways into the jurisdiction software, which typically assuages any IT concerns that they may have. And so often if it's an email submittal and that jurisdiction still has authority over what's implemented or what they pull out of those emails, etc. And so we actually have not come across an IT department that has identified any issues with those approaches and how they could be used.

Susanna:
And this one is fairly detailed: Can you describe briefly the relationship between SolarAPP and FIT QM? FIT QM is a project to automate inspections as I understand it.

Jeff Cook:
And I'm aware, absolutely. So the Institute for Building Technology and Safety is a partner on

the SolarAPP+ as well, and they're also the lead on that inspection software, also funded by DOE. So thanks, Becca, for that, as well. Ultimately these tools are designed to be able to function together. And so SolarAPP is focused on permitting. We are not focused on inspection. So the IBTS software focuses on inspection and helps to improve the efficiency of that process. Certainly SolarAPP develops an inspection checklist that makes inspecting solar a lot easier, but IBTS' software can expand upon that for inspections writ large. And so the two softwares are compatible and will be able to work together. As we get jurisdictions that adopt IBTS and SolarAPP, we can show that how that integration works seamlessly.

Susanna:
Great; thank-you. And I think that's as much time we can take for questions. I'll turn it back over to you, Becca.

Becca Jones-Albertus:
Thanks, Susannah. Well, I wanna just first thank you, Abby and Jeff, so much for being with us here today. As you can tell, there's a lot of excitement from folks on the call about SolarAPP and we're really excited as we get into this next phase of growing the number of jurisdictions and really rolling solar about. Jeff or Abby, any final comments you want to make before we close out?

Abby Hopper:
I would like another thank you. Thank-you to the DOE and the SETO office and to NREL for the partnership. I mean, I think this is the best of industry and local government and the federal government coming together to really provide teams to help consumers so we really appreciate it.

Jeff Cook:
And I just wanted to say that the SolarAPP is going to be putting out results related to the pilots and the performance of the application, and so stay tuned for that. And also stay tuned for another announcement related to SolarAPP coming up next week, so really exciting time.

Becca Jones-Albertus:
Thanks so much, Jeff. Thank-you, Abby. And you see up on your screen how you can sign up for SolarAPP updates, solarapp.nrel.gov. You can find the recording of this webinar and other webinars at Energy.gov/seto-events. You have our email address for questions and our newsletter, so you can sign up so you don't miss future announcements from DOE's Solar Energy Technologies Office. And we thank you so much for being here today. Hope to see many of you on Tuesday for our justice, equity, diversity, and inclusion focus. We're bringing in another webinar then. And again, thank-you for being here today.