CESA Webinar

NREL Solar Permitting Tools: An Introduction to SolarAPP+ and TRACE Tool

May 19, 2021
Webinar Logistics

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Webinar Speakers

Jeff Cook

Nate Hausman
Project Director, Clean Energy States Alliance (moderator)
NREL Solar Permitting Tools: An Introduction to SolarAPP+ and TRACE Tool

Jeffrey J. Cook PhD
Webinar Agenda

- Overview of Research and Development Agenda
- Overview and Demonstration of NREL's Solar TRACE tool
- Introduction to NREL’s SolarAPP+
- Summary of SolarAPP+ Pilots
- Demonstration of SolarAPP+ Compliance Checks
National Renewable Energy Laboratory (NREL)

- 1,800 Employees, plus more than 400 early-career researchers and visiting scientists
- World-class facilities, renowned technology experts
- Nearly 750 Partnerships with industry, academia, and government
- Campus operates as a living laboratory
- $872M annually

National economic impact
NREL Research Analysis

Analysis

• Identify PII-related process requirements, cycle times, and cancellations across all municipalities.
• Demonstrate how PII-related process requirements correlate with delay and cancellations.
• Increase transparency into PII practices nationwide.

Software

• Build Solar Automated Permit Processing Platform (SolarAPP+ Platform).
Demonstration of Solar TRACE

https://solarapp.nrel.gov/solarTRACE
Solar TRACE background

- Data: 200,000 residential rooftop PV systems (2017 – 2019)
- Source: installer partners
- Cycle times for ~740 AHJs and ~100 utilities are included in the dataset
- Please reach out to NREL to add more data to the database for 2020 and beyond!
Live Demonstration of Solar TRACE

https://solarapp.nrel.gov/solarTRACE
Why are we developing the SolarAPP+?

- Residential PV markets are expanding
- AHJs must permit and inspect these systems with limited resources
- Many PV systems have similar designs
  - ~75% of solar systems have one inverter and one or two solar arrays.

**Estimated PV Growth (2018 – 2024)**

*Source: U.S. Solar Market Insight Q4 2019*
How is Industry Growth Impacting your Community?

- What percentage of total permit application volume does rooftop solar represent?
- Are there consistent issues with rooftop solar permits or inspections?
- Would you agree that ~75% of solar permits are standard, more cookie cutter projects?
Benefits of SolarAPP+

• Automated online permitting can:
  • Reduce resource constraints on AHJ personnel
    • Block incomplete, non-compliant applications
  • Allow your staff to focus on tougher projects/tech
  • Enable economic development
  • Support AHJ clean energy and environmental goals
What will SolarAPP+ Do?

• Provide a flexible, web-based PV-permitting tool for residential systems at no-cost to AHJs.
• Evaluate applications for safety and code compliance.
  • Enable standardization of permitting processes.
• Deliver automated, instant plan review and permit approval
• Provide a clear inspection checklist to streamline inspection processes
• Integrate with existing software platform(s)
• Incorporate energy storage and expand to other market segments.
SolarAPP+ Project Timeline and Milestones

Develop
- Develop preliminary permit requirements

Vet
- Vet draft requirements with contractors and AHJs

Test
- Test alpha software functionality

Pilot
- Pilot the beta software

Launch
- Launch SolarAPP+ for widespread use

Transition
- Transition SolarAPP+ to long-term program manager
• **AHJ Requirements**
  - AHJ repurposes instant permit process for solar.
  - AHJ adds new input for SolarAPP Approval ID
  - AHJ accepts via email or uploaded approval document.
    - *(IF DESIRED as part of record)*
  - AHJ maintains permit process for ineligible solar projects.

• **Included in SolarAPP+**
  - Automated plan review for code compliant systems
  - Ability to adopt newer model codes.
**AHJ Requirements**
- AHJ creates a new Stripe account tied to their bank account
- AHJ manually uploads record of SolarAPP+’s issued permit received from email to enable inspection scheduling
- AHJ maintains permit process for ineligible solar projects

**Included in SolarAPP+**
- Automated plan review for code compliant systems
- AHJ fee collection through Stripe
- Permit and inspection job card issued immediately
- Ability to adopt newer model codes.
Piloting Update and Process
Phase 1 Participating Pilot AHJs

- Three Authorities Having Jurisdiction (AHJs) participated in Phase 1 of the SolarAPP+ pilot, which began in December 2020:
  - Pima County, AZ
  - Pleasant Hill, CA
  - Tucson, AZ

### Historical Residential Solar Permit Submittals by AHJ (2016-2020)

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>Annual Average</th>
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<tr>
<td>Pima Co.</td>
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<td>1633</td>
<td>1740</td>
<td>1408</td>
<td>1682</td>
<td>1653</td>
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<td>Pleasant Hill</td>
<td>220</td>
<td>195</td>
<td>197</td>
<td>286</td>
<td>180</td>
<td>216</td>
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<tr>
<td>Tucson</td>
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<td>1627</td>
<td>1812</td>
<td>1285</td>
<td>1534</td>
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## AHJ Characteristics

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<tbody>
<tr>
<td>Pima County</td>
<td>AZ</td>
<td>Phase 1</td>
<td>1,068,730</td>
<td>1682</td>
<td>Accela, ACA</td>
<td>$94</td>
<td>3</td>
<td>8</td>
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<td>Version 1</td>
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<td>Phase 1</td>
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<td>180</td>
<td>Accela</td>
<td>$235</td>
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<td>$99</td>
<td>2</td>
<td>11</td>
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<td>AHJ</td>
<td>Participating Contractors</td>
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<tr>
<td>Pleasant Hill, CA</td>
<td>Freedom Forever, SunPower, SunRun, and Tesla</td>
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SolarAPP+ Pilot Projects

• During the pilot, contractors submitted a control group of eligible SolarAPP+ projects through the traditional permit review process and a test group through SolarAPP+.
• AHJ, SolarAPP+, and contractors participated in weekly pilot meetings.

Residential Solar Permit Submittals during SolarAPP+ Pilot
(As of 4/14/21)

<table>
<thead>
<tr>
<th>Location</th>
<th>SolarAPP+</th>
<th>Traditional</th>
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<tbody>
<tr>
<td>Pima Co.</td>
<td>43</td>
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<td>Pleasant Hill</td>
<td>16</td>
<td>9</td>
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<tr>
<td>Tucson</td>
<td>47</td>
<td>15</td>
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</table>

DRAFT RESULTS: DO NOT SHARE OR DISTRIBUTE
SolarAPP+
Demonstration
SolarAPP Outreach Materials

- Website: [https://solarapp.nrel.gov/](https://solarapp.nrel.gov/)
- Kickoff webinar: [https://www.youtube.com/watch?v=pllKb165xYI](https://www.youtube.com/watch?v=pllKb165xYI)
- Demonstration webinar: [https://www.youtube.com/watch?v=wMDZYo7wf4I&t=1869s](https://www.youtube.com/watch?v=wMDZYo7wf4I&t=1869s)
- Piloting webinar: [https://youtu.be/iaocESF9Ilg](https://youtu.be/iaocESF9Ilg)

Questions and Thank You!

For more information contact: solarapp@nrel.gov

To sign-up for piloting: [https://www.surveymonkey.com/r/SolarAPPInterest](https://www.surveymonkey.com/r/SolarAPPInterest).

www.nrel.gov
Upcoming Webinar

How Low- and Moderate-Income Solar Programs are Evaluated: Trends and Best Practices
Thursday, May 20, 1-2pm ET

Evaluating the Financial Performance of Connecticut’s Low- and Moderate-Income Solar Lease Program
Wednesday, May 26, 1-2pm ET

Read more and register at: www.cesa.org/webinars
Thank you for attending our webinar

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