

# SPDS ver 1.0 Manual

The Solar Plans Design System (SPDS) is an online tool designed by the Florida Solar Energy Center (FSEC) to certify and expedite the installation of simple, residential roof top solar photovoltaic systems. By providing a tool that can quickly and accurately produce certified, code compliant electrical drawings, the contractor can save time and money on the installation process. In addition, the authority having jurisdiction (AHJ) also benefits in that they are assured that the package submitted to them will be code compliant and meet FS 377.705.

Access to the tool requires and internet connection. The tool is accessed by typing the following URL into an internet browser:

<https://scp.fsec.ucf.edu>

Your browser will render the landing page below:

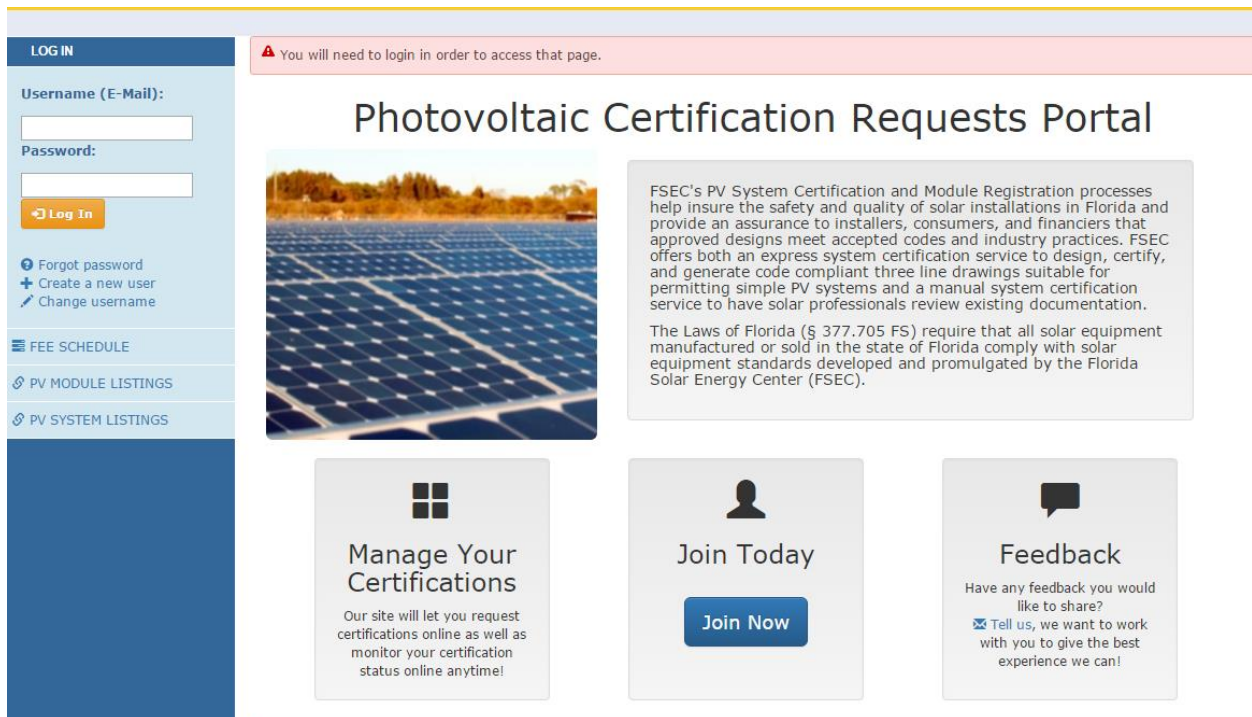
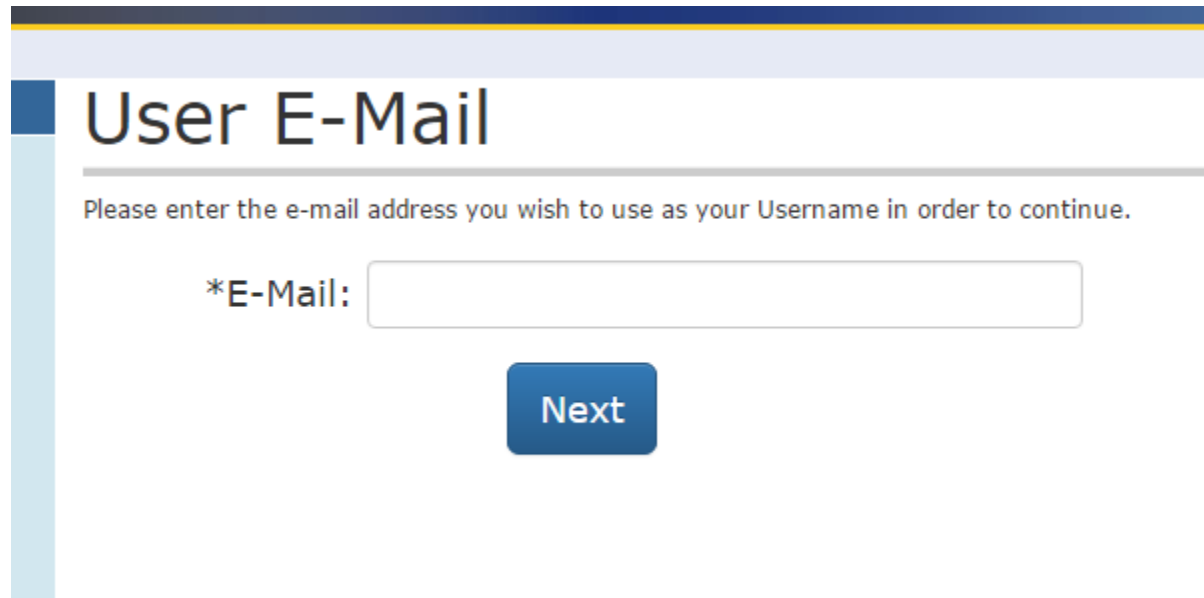


Figure 1 User Landing Page.

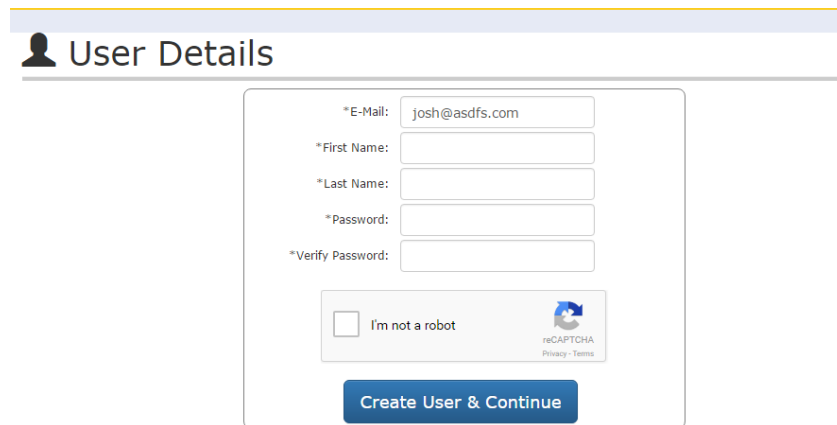
## User Registration

First time users will enter the site by using the **Join Today** access button. The user will then be prompted to enter a valid email address followed by a screen requiring some basic information and a user password.



The screenshot shows a registration page titled "User E-Mail". At the top, there is a blue and yellow header bar. Below the title, a light blue vertical bar is on the left. The main content area has a light blue background. A message reads: "Please enter the e-mail address you wish to use as your Username in order to continue." Below this is a text input field with the label "\*E-Mail:". Underneath the input field is a blue button with the text "Next".

Figure 2 Valid Email Entry.



The screenshot shows a registration page titled "User Details". At the top, there is a blue and yellow header bar. Below the title, a light blue vertical bar is on the left. The main content area has a light blue background. A message reads: "Please enter the e-mail address you wish to use as your Username in order to continue." Below this is a text input field with the label "\*E-Mail:" containing the text "josh@asdfs.com". Underneath are four more text input fields with labels: "\*First Name:", "\*Last Name:", "\*Password:", and "\*Verify Password:". Below these fields is a reCAPTCHA widget with a checkbox labeled "I'm not a robot" and the reCAPTCHA logo. At the bottom of the form is a blue button with the text "Create User & Continue".

Figure 3 User Detail information entry form.

Once a user account has been created the tool allows the new user to either continue as a single user or join as part of a previously registered company.

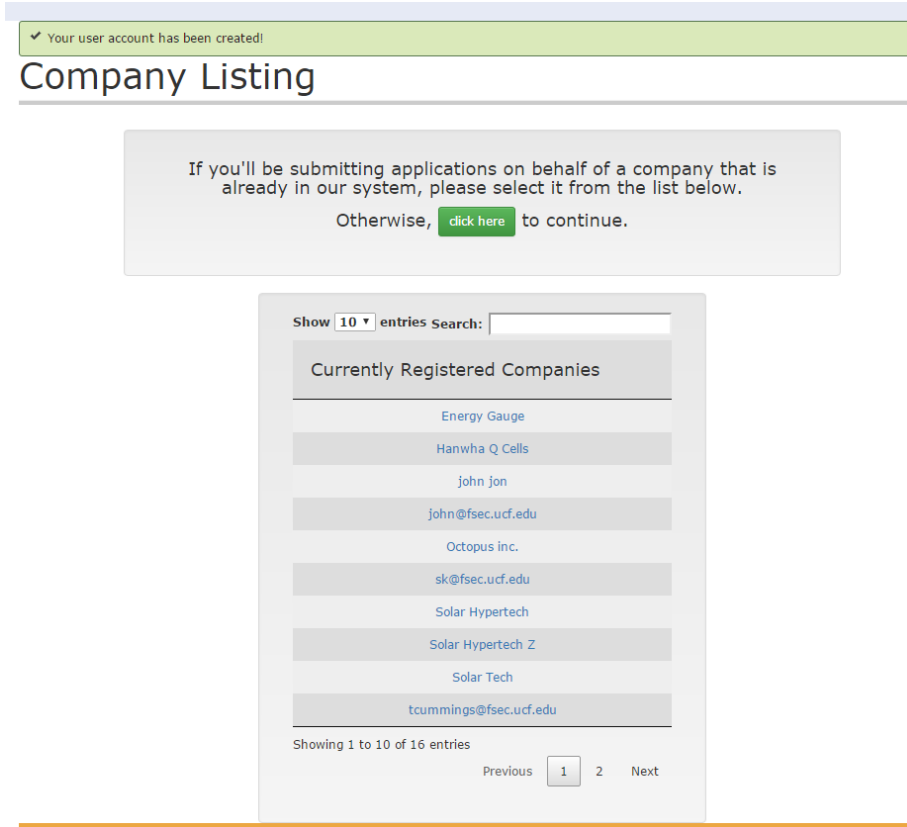


Figure 4 Existing company user registration.

By selecting an existing registered company, the user is prompted to initiate a request to join. An email will be sent to the company's site administrator who will then enter the new user into the list of authorized company users. The new user will receive an email confirming registration with the existing company.

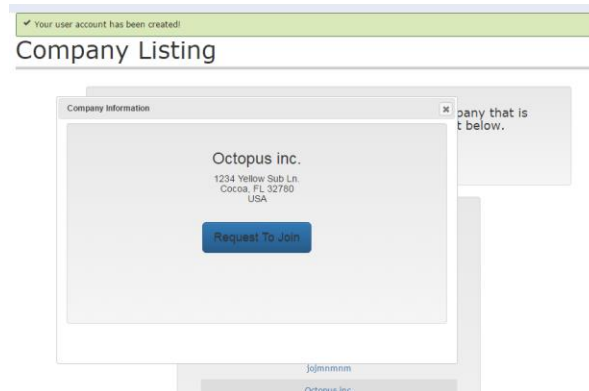
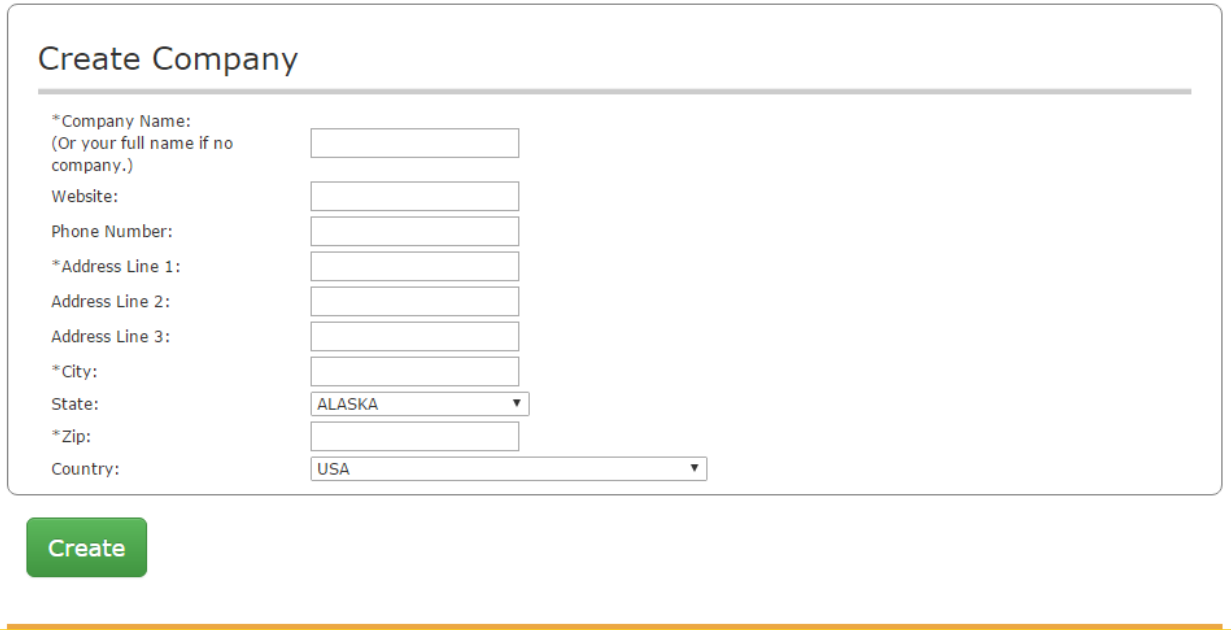


Figure 5 Company request screen.

To continue the registration as a new company or new individual, the user is prompted to complete the company creation information form below. Clicking on the “Create” button will register a new user. At this point, the tool can be accessed using the login section (Figure 7).



The image shows a web form titled "Create Company". It contains several input fields and dropdown menus. The fields are: \*Company Name: (Or your full name if no company.), Website:, Phone Number:, \*Address Line 1:, Address Line 2:, Address Line 3:, \*City:, State: (with "ALASKA" selected), \*Zip:, and Country: (with "USA" selected). A green "Create" button is located below the form.

Figure 6 New user information form.

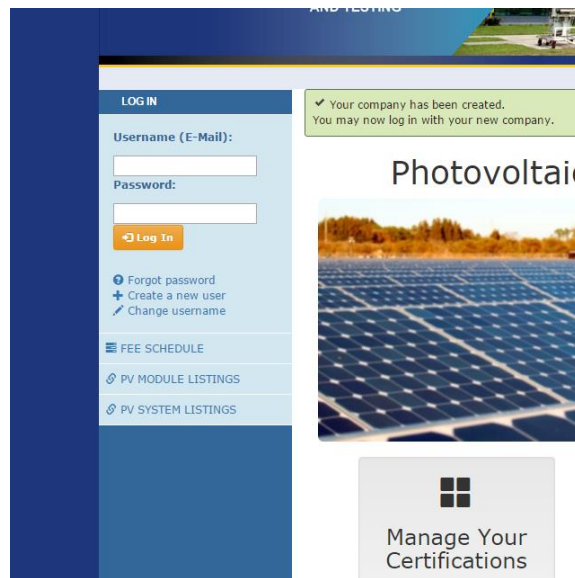


Figure 7 Registered user login panel

# SPDS Options

The SPDS design tool incorporates three main features:

1. PV system certification. Photovoltaic systems can be certified by either the Manual review process or using the Express plans generation system.
2. PV module registration. Photovoltaic modules can be registered for use in the State of Florida per FS 377.705
3. Past Requests. System and Module certifications previously registered can be viewed along with pending status of actions in progress.

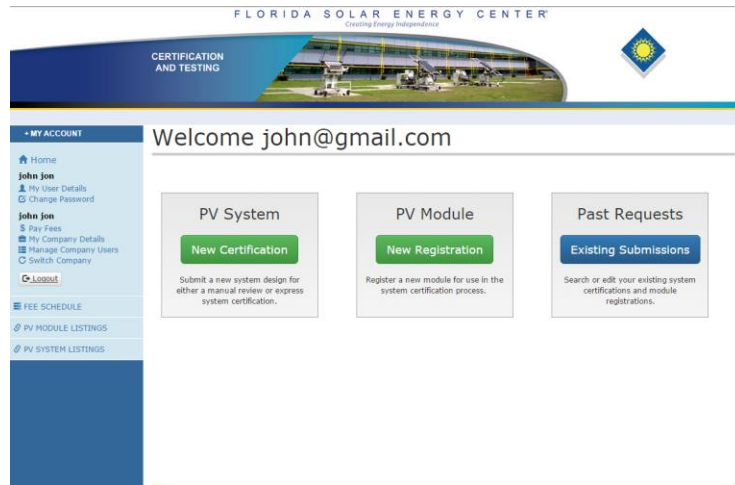


Figure 8 SPDS Option panel.

## PV System Certification

PV system certification can be accomplished through either a Manual review process or using the Express system plans generation engine. Selecting the New Certification button will present the options for selecting the desired certification process. A new system to be certified is named on the Project Name page.



Figure 9. Project Name Page.

After a project is named, the user is prompted to select the review option through the Review option page. There are two options for review, Manual and Express. The Express is subject to restrictions and requires training.

**PV System Certification**

The **Express Option** is restricted and limited to the following:

- ✓ Group R-3 residential structures only; roof mounted PV arrays.
- ✓ 10 kWAC systems or less (Tier 1).
- ✓ Conventional string inverter(s).

[Additional restrictions apply](#)

**Manual Review**

Choose the manual review system certification option to submit user generated electrical drawings for evaluation by the FSEC Design Review Committee.

**This is the only option for systems that don't meet the [express system certification design criteria](#).**

The process typically requires 1-3 business days.

**Express**

Choose the express system certification option to have an FSEC certified, code compliant drawing automatically generated by our online system using select components.

Only systems meeting the [express system certification design criteria](#) are eligible for express system certification.

The express system certification option is currently limited to users who have completed our online training course by **watching an introductory video, completing an evaluation, having their contractor license number verified by FSEC.**

If you're interested in using the express system certification option, click the button below to begin the online training.

**Begin!**

Figure 10 Review Option Selection page.

## Express Option Training

Use of the Express certification training requires the user to be a certified contractor and participate in a training session. First time users who select the Express method will be prompted to enter a valid State of Florida contractor's license number, participate in a training video and complete a short survey.

 PV System Express Training

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## Solar Plans Design System

Online Express System Training




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Contractor Number:

**Training Program Evaluation:**

**Directions: Please provide comments and information about your experience with this training program. Please answer the following questions carefully and honestly. Your answers will provide important information to help us improve this training program.**

#	Question	Yes	No
1	Were the goals and objectives of this training program made clear to you?	<input type="radio"/>	<input type="radio"/>
2	Were the goals and objectives consistent with your expectations?	<input type="radio"/>	<input type="radio"/>
3	Did you encounter any problems in completing the training program?	<input type="radio"/>	<input type="radio"/>

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**For questions 4-10, please rate the following aspects of the training program using the scale below. Please circle the number that is most appropriate for you.**

#	Question	Inadequate	Fair	Good	Very Good	Excellent
4	Overall quality of the training...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5	General organization of the training...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6	Pacing of the training...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7	The readability of graphics...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8	Quality of the instruction <a href="#">manual</a> ...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9	The instructor's delivery of information...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10	Effectiveness of training for enabling use of SPDS...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 11 Express Option Training page.

At the completion of the training session and required survey, the training session is validated and the user is authorized to use the Express certification option. Validation is accomplished by verification of both the training and the contractor number. The user is notified via email that Express authorization is complete. Express authorization is only required once per valid contractor number.

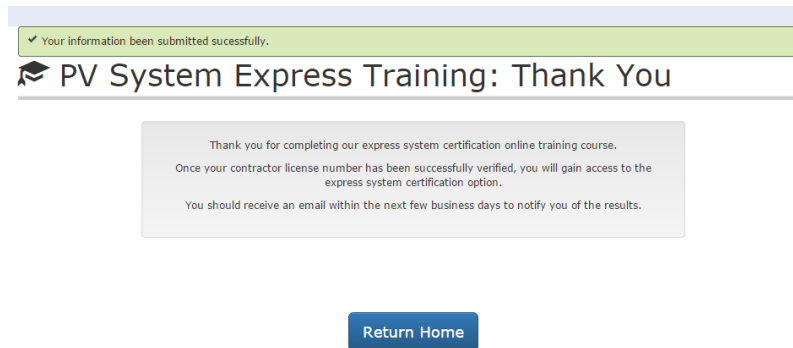


Figure 12 Express training verification page

## Express Option System data entry.

The Express Option data entry form contains the required information for an Express certification. Field entry information is provided online by hovering the mouse over the selected data field.



### Photovoltaic Array

Choose the FSEC registered PV module the system uses and indicate the combined number of strings on all inverters, the number of modules in the smallest string(s), and the number of modules in the largest string(s), and the total number of modules for that model among all inverters. For systems using microinverters or ACPV modules, please provide information for branch circuits rather than series strings. If the module is not listed, please contact the manufacturer to request they register it FSEC.

Module	# of Strings	Smallest String	Largest String	# of Modules	Module Info	Remove
---	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>		

\*PV Module's distance above roof:  (in)

### Power Conditioning

Select the inverter model the system uses, the quantity of that inverter being used, and the operating voltage. If the inverter is not listed, please email [FSEC](#) with the data sheet to have it added.

Inverter	# of Inverters	AC Output Voltage	Inverter Info	Remove
---	<input type="text" value="1"/>	---		

### Interconnection

*Busbar Rating:	<input type="text"/>	(A)
*Supply OCPD Rating:	<input type="text"/>	(A)
*Inverter OCPD Device Sum:	<input type="text"/>	(A)
*Inverter Output Current Sum:	<input type="text"/>	(A)
*Total Of Load Breakers:	<input type="text"/>	(A)

Figure 13 Express Option data entry form

At the completion of the system entry parameters, structural documents must be uploaded to complete the permit package. These will be signed and sealed by a registered professional engineer and contain all the elements presented in the Structural Schematic checklist.

## Structural Schematic

Site-specific, signed & sealed structural drawings and specifications (including all items below):

- ✓ Minimum design loads
- ✓ Building Code in effect {currently 5th Edition (2104) FBC}
- ✓ Building Type (limited to group 3 residential)
- ✓ Risk Category (limited to Category II)
- ✓ Site wind zone velocity (mph)
- ✓ Exposure (limited to C & D)
- ✓ Roof slope (limited to 2:12 to 6:12)
- ✓ Eave height (ft)
- ✓ Ridge height (ft) (limited to maximum average height of 30 ft)
- ✓ Roof structure (limited to wood trusses spaced 2 feet on center maximum)
- ✓ Roof covering (shingles, tile, metal – limited to 1 layer)
- ✓ Module dead load (psf)
- ✓ Racking system dead load (psf)
- ✓ Total additional dead load (maximum allowed = 7psf)
- ✓ Array mounting details (including product cut sheets)
  - Structural details: Materials
  - Structural details: Dimensions
  - Structural details: Methods of attachment
  - Structural details: Fastener type and material
  - Structural details: Fastener diameter (minimum)
  - Structural details: Fastener length (minimum)
  - Structural details: Number of fasteners per attachment
  - Structural details: Module to rails attachment details
  - Structural details: Grounding clips and lugs
  - Structural details: Penetration flashing and waterproofing
- ✓ Site-specific, signed & sealed roof plan with module layout and section drawings showing attachment details (including all items below):
  - Drawing scale
  - Wind zone diagram including pressure zones
  - Arrangement of modules on the roof
  - PV system location: installation zone not closer than 3 feet to valleys, ridges, or roof edges
  - PV system location: support rails at right angles to roof trusses
  - PV system location: number of modules in array
  - PV system location: installed parallel to roof (max 10 inches above surface)
  - PV system location: spacing of support rail attachments to roof trusses
  - Access point: location of code-compliant access pathways
- ✓ Site-specific, signed & sealed site diagram and specifications (including all items below):
  - North arrow
  - Location(s) of main service or utility disconnect(s)
  - Locations of PV system disconnects

Upload Structural Schematic

Step#1: Select File  
 No file chosen

Step#2: File Description

Step#3:

Uploaded Files

File Name	File Type	Date	File Description
No files found.			

Figure 14 Structural Document requirements upload page.

Once the structural documents are uploaded, the electrical schematics are available for preview. The user can then review the drawing and submit.

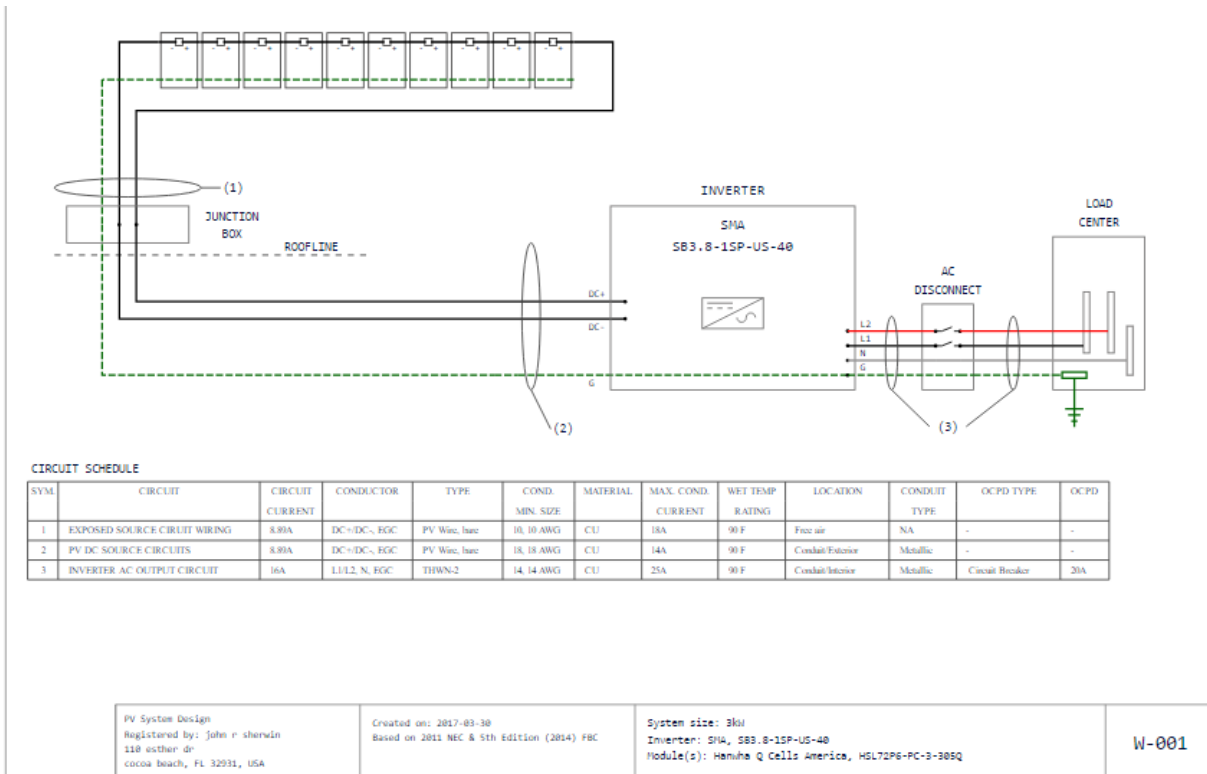


Figure 15 Electrical Schematic Preview

## Payment

Once submitted, an invoice is generated and made available for payment. The System History payments page will show all packages submitted by the user and actionable items needed.

**+ MY ACCOUNT**

Home

**John Sherwin**

My User Details  
Change Password

**john@fsec.ucf.edu**

Pay Fees  
My Company Details  
Manage Company Users  
Switch Company

[Logout](#)

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FEE SCHEDULE

[PV MODULE LISTINGS](#)

[PV SYSTEM LISTINGS](#)

## Payment Details

	Invoice	Date Created	Description	Amount Due	Amount Paid	Status
<a href="#">View</a>	01014541	3/2/2017 10:51 AM	PV System Package	0	75	PAID
<a href="#">View</a>	01014540	3/2/2017 9:50 AM	PV System Package	0	75	PAID
<b>Pay Now</b>	01014516	2/28/2017 2:50 PM	PV Module Package	150	0	BILLED
<a href="#">View</a>	01014515	2/28/2017 2:45 PM	PV System Package	0	500	PAID
<a href="#">View</a>	01014514	2/28/2017 1:36 PM	PV System Package	0	500	PAID

[Return](#)

Figure 16 System History Payments page.

Selecting the Pay Now option will generate a payment agreement. Agreement will produce the Payment Method page and options for payment.

## Payment Agreement

Date: 2/28/2017

Bill to: john@fsec.ucf.edu  
1679 clearlake rd  
cocoa, FL 32922 USA

Description Of Fee(s): PV Module Package

**Fees**

Service	Item	Amount(\$)
PV Module: Registration - Certification	PV Module Model: ACPV123	\$150

Invoice Number: 01014516

Invoice Status: BILLED

Payment Type: Online

Paid By: \_\_\_\_\_

Transaction ID: \_\_\_\_\_

Invoice Total: \$150.00

Amount Paid: \$0.00

Total Due: \$150.00

By clicking "I Agree", you agree to pay the total of \$150 for PV Module Package. You will be directed to payment site.

Cancel
I Agree

Figure 17 Payment Agreement.

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### Select Payment Method

Please choose the method of payment.

- Pay by Credit or Debit Card
- Pay by Personal Check
- Pay by Corporate Check

Figure 18 Payment Method.

✓ Thank you! Your payment has been processed successfully.

## Invoice Details

<p>Date: 3/22/2017            Bill to: john@fsec.ucf.edu            1679 clearlake rd            cocoa, FL 32922 USA</p>	<p>Invoice Number: 01014516            Invoice Status: PAID            Payment Type: Online            Paid By: Sherwin, John            Transaction ID: TT_13260_1490197517</p>
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Description Of Fee(s): PV Module Package

**Fees**

Service	Item	Amount(\$)
PV Module: Registration - Certification	Request ID: 400203 PV Module Model: ACPV123	\$150

Invoice Total: \$150.00  
 Amount Paid: \$150.00  
 Total Due: \$0.00

Figure 19 Invoice

Once the payment has been processed, an invoice can be printed. Selecting the Continue button will display the package download page.

## 📄 PV System Certification: Complete!

Your PDF Package is being generated.  
One moment please...

Your Photovoltaic System is now certified!

Download PDF Package

Figure 20 Package Details

## Past Requests

The SPDS tool allows users to view and search past certifications. This feature is accessed through the main page. Selecting Existing Submissions in the Past Requests panel will return the submission history.

## Requests

Show 10 entries
 Search: 
Previous 1 Next

Request#	Name	Status	Package#	PDF	Remove
	<a href="#">testhouse</a>	PV System Certification Created			
	<a href="#">solar123</a>	PV Module Registration Created	1932		
	<a href="#">321house</a>	PV System Certification Created			
	<a href="#">myhouse</a>	PV System Certification Created			
<b>700060</b>	<a href="#">testhouse</a>	PV System Certification Certification Complete			

Showing 1 to 5 of 5 entries

Previous 1 Next

Figure 21 Certification Request history

Highlighted text within the Certification Request history page allows the user to view system submissions as well as the history and status. Submissions can also be deleted and downloaded.