NABCEP
Continuing Education CONFERENCE

March 8, 9 & 10, 2013

10 YEARS
OF CERTIFICATION

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JULY 09–11 2013

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NABCEP Continuing Education CONFERENCE
March 8, 9 & 10, 2013

10 YEARS OF CERTIFICATION

Welcome to the Second Annual NABCEP Continuing Education Conference. On behalf of the NABCEP Board of Directors and our staff, I welcome you to this event.

NABCEP Certified Installers and Technical Sales Professionals will be able to attain up to 18 Continuing Education (CE) hours that are required for recertification over the three days of this conference. The forty-one scheduled sessions cover a wide variety of topics that we think will be of interest and value to our certificants. We are particularly excited to be able to offer participants the opportunity to learn more about job safety, roofing for non-roofers, the 2011 NEC requirements, the upcoming 2014 NEC requirements, and financial analysis. We, of course, are also very appreciative of each and every manufacturer that has come to this event to meet with you and teach you more about their products and services.

I'm sure that the close-knit nature of this event will allow much quality time between presenters and session attendees. Be sure to stop by each display table and take advantage of some "face time" with the manufacturers that are present.

Some of NABCEP's staff, including myself, will be present throughout the weekend. We look forward to meeting each of you and hearing your thoughts. We're sure you will find this NABCEP CE Conference an enjoyable and rewarding event. We welcome your feedback and input on how the conference went for you, what worked well, what didn't, and how you feel we could make the event even better.

Enjoy the sessions, meals, refreshments, and networking; but more importantly, enjoy the camaraderie that comes when spending time among your peers.

Sincerely yours,

Richard Lawrence, *Executive Director*

Sponsored by

SMA

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Quick Mount PV RESPECT THE ROOF

Schneider Electric

SOLARPRO

renova

Rolls BATTERY ENGINEERING

SolarWorld

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College of Engineering & Computer Science
Office of the Dean
6000 J Street · Sacramento, CA 95819-6023
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Dear NABCEP Continuing Education Conference Attendees,

It is a great pleasure for us at the California State University, Sacramento to be hosting this year's NABCEP Conference.

Our University is the home of the California Smart Grid Center and as you all must know, renewable energy resources are at the top of the list in smart grid. One of the biggest challenges that we address in our research is integration of distributed generation. That is, to help optimize the use and benefits of all of the solar installations many of you work with on a routine basis.

Our hope is that we provide you with a great experience while attending this year's conference. Our State Capitol is in Sacramento as are many attractions and museums. We also have some great restaurants and bars. For the nature folks, there are some beautiful trails and parks to visit along the American and Sacramento Rivers, so there will be something for everyone to enjoy. Many of these trails are right next to our building so you can enjoy them during breaks, etc.

I look forward to meeting you.

Sincerely yours,

Emir José Macari, Ph.D.
Dean

We would like to extend a sincere welcome to all of the solar professionals who have come to Sacramento for NABCEP's second annual Continuing Education Conference. The entire SMA team is genuinely excited to have you here in the regional home of our U.S. headquarters.

This conference is the result of months of hard work, patience and high level collaboration, and we thank NABCEP for welcoming us as the lead sponsor and a dedicated partner.

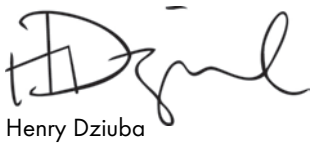
Our longtime support of NABCEP and our role as a sponsor of this conference exemplifies SMA's belief in NABCEP's mission. SMA is proud of its ongoing commitment to promote education, certification for installers and quality assurance.

SMA and NABCEP share a common goal to offer educational opportunities for solar professionals that will improve their knowledge and skills, a key element of a maturing industry. The solar landscape, as we all know, is constantly changing. Educational opportunities such as this conference ensure that we maintain a continuous dialogue on the latest technology and best practices, as well as how we can work together to maintain our industry's growth during the current economic challenges.

Your presence here confirms a commitment to becoming part of an elite group of solar professionals across the US. Your willingness to develop your knowledge and seek further education as a solar professional will not only help you advance in your own careers, but will contribute to raising industry standards overall.

NABCEP and SMA are likeminded in their mission to promote industry growth through programs like these. Along with NABCEP, we want to ensure today's professionals understand the importance of safety, certification, quality installations and consumer confidence.

We hope this conference brings professional development, exceptional networking opportunities and a greater understanding of how we, together, can move forward as an industry.



Henry Dziuba
President and General Manager
SMA America

Friday - March 8, 2013

Stand Alone & Battery Back-up Applications

Greg Smith, SMA America, LLC
Friday, March 8
9a – 12:30p
Riverside Hall 1004
3 CEU's

Uncover the secrets of stand-alone and battery backup systems using SMA's Sunny Island battery inverter. Grid outages caused by hurricanes, winter storms or poorly run utilities will be no match for your AC-coupled system.

Magnum Energy Product Installation and Training

Alan Santos-Buch, Magnum Energy, Inc.
Friday, March 8
9a – 12:30p
Riverside Hall 2003
3 CEU's

This is an overview of and training for off grid installations using Magnum Energy renewable energy products.

Design & Installation of Large Commercial & Utility Scale Solar Mounting Systems

Wolfgang Fritz, Ph.D., Schletter, Inc.
Friday, March 8
9a – 12:30p
Riverside Hall 2013
3 CEU's

This seminar addresses the structural aspects of PV system design for both roof mounted as well as ground mounted installations. Applicable building codes and standards will be examined and loads acting on the solar array will be discussed. Design examples will be provided so attendees can follow the design process. Special design considerations and detailing of systems will also be explored. A hands-on portion will follow the classroom-style instruction to reinforce the learned information.

Solar 201: PV Installation

Jamie Skenderian, SolarWorld
Friday, March 8
9a – 12:30p
Riverside Hall 1002
3 CEU's

The course involves classroom presentation as well as hands-on installation. The installation will include making the necessary connections to a grid tied inverter, AC disconnect, and a service panel.

Wiley Bonding & Grounding Systems

Harley Haney, Burndy, LLC
Friday, March 8
9a – 12:30p
Riverside Hall 1010
3 CEU's

In this interactive presentation, you will learn how to properly bond and ground your solar PV array on a variety of mounting systems using the BURNDY LLC Wiley WEEB technology. Project applications from residential to utility scale will be covered with best practices and where to easily install WEEBs and LUGs. In addition, wire management on systems will be covered.

Solar Roofing Best Practices

Johan Alfsen, Quick Mount PV
Friday, March 8
9a – 12:30p
Riverside Hall 3005
3 CEU's

Maintaining roof warranties and installing quality products can protect your installation and also save you time on the roof. This class will cover best practices for roof penetrations, solar mounting and flashing systems.

Economics of Solar: Making the Financial Case for Commercial & Residential PV: Part 1

Andy Black, OnGrid Solar
Friday, March 8
9a – 12:30p
Riverside Hall 1013
3 CEU's

This workshop will provide an overview of PV system costs and approximate savings for commercial & residential systems. Detailed information on state & federal incentives will be provided and how to apply and use them. The workshop will review the various methods of performing financial analyses in conjunction with the incentive savings realized. The assumptions and variables that affect each analysis will also be presented including inflation, maintenance expenses, and interest rates. All students will receive one month freeuse of the OnGrid Tool (licensing agreement required) to try additional scenarios.

Off Grid Solar

Don Warfield, Ameresco
Friday, March 8
2p – 5:30p
Riverside Hall 1004
3 CEU's

This course will consist of a discussion of the differences (both hardware and design) between off-grid PV systems and current grid-tied systems. Includes a hands-on design activity.

Commercial & Utility Scale Inverter Training

Eric Every, Solectria Renewables
Friday, March 8
2p – 5:30p
Riverside Hall 2003
3 CEU's

Come learn about the most flexible line of 3-phase inverters in the solar market including our exciting new 2013 product releases. We will review the market leading, highest efficient inverters: 50-100kW, SGI 225-500, and the SGI 500XT (external transformer inverter) in detail. If you don't already know, find out why Solectria's products are ranked highest in customer satisfaction and quality for ease of design installation and LCOE.

Real World PV Performance

Perry Rosensweig & *Jim Kadaki*, Mitsubishi Electric
Friday, March 8
2p – 5:30p
Riverside Hall 2013
3 CEU's

Solar industry insiders know that the heart of the PV system resides in the module and understand the difference between real world deployment and performance data generated in the laboratory: shading, light-induced degradation, STS vs. PTC, etc. Performance under real world conditions is a result of delicate interaction between the mechanical and electrical module components, how they are assembled, and environmental factors specific to the location of installation. Factors not immediately visible to the naked eye (i.e. diodes, strength of frame materials chosen, module mismatch) can be as influential in determining system yield as degradation caused by installation in corrosive environments. Modeling and yield measurement should be done accordingly. PV module performance in the real world means taking this totality of factors into account; system designers and installers need to adopt a more holistic approach to assessing the many elements which determine module output over time. This presentation will provide participants with a snapshot of these key factors, allowing for an accurate assessment of how PV modules will perform in the field.

Friday - March 8, 2013

Advanced Design & Installation

Chad Medcroft, Zep Solar
Friday, March 8
2p – 5:30p
Riverside Hall 1008
3 CEU's

In a mix of fast-paced lab and lecture, students learn to identify and install key components of the Zep Solar platform including Zep-framed modules, Leveling Feet, Interlocks, Array Skirts, Ground Zeps, Wire Clips, Universal Box Brackets, and more on a mock roof. Using Zep's online Design Tool, the Zepulator™, students will learn the process to create Zep Solar layouts, produce comprehensive Bills of Material and engineering calcs for both standard and advanced designs. Students will learn to tune and troubleshoot installation challenges quickly and easily including irregular roof surfaces, non-standard rafter spacing, attachment points that coincide with module intersections, thermal expansion joints, slight variations in module dimensions, and more by applying Best Practices learned in class.

Commercial Scale Design & Implementation of Microinverters

Peter Lum, Enphase Energy
Friday, March 8
2p – 5:30p
Riverside Hall 2010
3 CEU's

Enphase will offer comprehensive training covering Enphase's systems and technology, System Design and Installation, System Activation, Registration and Monitoring, and Basic and Advanced Communications design and installation.

Cal-OSHA and the Solar Industry

Dick Roberts, California Division of Occupational Safety and Health
Friday, March 8
2p – 5:30p
Riverside Hall 3005
3 CEU's

This workshop provides an introduction to the hazards of solar installation work and the regulations applicable in California. Areas covered will include safety programs, work access, fall protection, and electrical hazards. A Q&A session will held at the end of the presentation.

Economics of Solar: Making the Financial Case for Commercial & Residential PV Part 2

Andy Black, OnGrid Solar
Friday, March 8
2p – 5:30p
Riverside Hall 1013
3 CEU's

This workshop will provide an overview of PV system costs and approximate savings for commercial & residential systems. Detailed information on state & federal incentives will be provided and how to apply and use them. The workshop will review the various methods of performing financial analyses in conjunction with the incentive savings realized. The assumptions and variables that affect each analysis will also be presented including inflation, maintenance expenses, and interest rates. All students will receive one month freeuse of the OnGrid Tool (licensing agreement required) to try additional scenarios.

Conference Schedule Friday - March 8, 2013

7:15 AM BUSES START FROM HOTEL

7:00 AM - 5:30 PM REGISTRATION - ALUMNI CENTER

8:30 AM OPENING REMARKS - ALUMNI CENTER

	RIVERSIDE HALL 1004	RIVERSIDE HALL 2003	RIVERSIDE HALL 2013	RIVERSIDE HALL 1002	RIVERSIDE HALL 1010	RIVERSIDE HALL 3005	RIVERSIDE HALL 1013
9:00 AM - 12:30 PM Coffee Break from 10:30 - 11:00 AM in Riverside Hall	Stand Alone & Battery Back-up Applications **SMA**	Magnum Energy Product Installation & Training **Magnum Energy**	Design & Installation of Large Comm & Utility Scale Solar Mounting Systems **Schletter**	Solar 201: PV Installation **SolarWorld**	Wiley Bonding & Grounding Systems **Burndy LLC**	Solar Roofing Best Practices **Quick Mount PV**	Economics of Solar Part 1 **Andy Black**

12:30 - 2:00 PM LUNCH IN EXHIBITOR AREA - ALUMNI CENTER

	RIVERSIDE HALL 1004	RIVERSIDE HALL 2003	RIVERSIDE HALL 2013	RIVERSIDE HALL 1008	RIVERSIDE HALL 2010	RIVERSIDE HALL 3005	RIVERSIDE HALL 1013
2:00 - 5:30 PM Coffee break from 3:30 - 4:00 PM in Riverside Hall	Off Grid Solar **Ameresco**	Commercial & Utility Scale Inverter Training **Solectria**	Real World PV Performance **Mitsubishi Electric**	Advanced Desgin & Installation **Zep Solar**	Commercial Scale Design and Implementation of Microinverters **Enphase**	Cal-OSHA & the Solar Industry **Dick Roberts**	Economics of Solar Part 2 **Andy Black**

5:30 - 8:00 PM **SMA** SPONSORED RECEPTION IN EXIBITOR AREA - ALUMNI CENTER

8:00 PM BUSES START TO HOTEL

Conference Sponsors

Conference Schedule Saturday - March 9, 2013

7:15 AM BUSES START FROM HOTEL

7:30 AM - 5:00 PM REGISTRATION - ALUMNI CENTER

	RIVERSIDE HALL 1004	RIVERSIDE HALL 1006	RIVERSIDE HALL 1008	RIVERSIDE HALL 1010	RIVERSIDE HALL 2010	RIVERSIDE HALL 1012	RIVERSIDE HALL 1013
8:30 AM - 12:00 PM Coffee Break from 10:00 - 10:30 AM in Riverside Hall	Decentralized Commercial Applications **SMA**	Morningstar TriStar MPPT Solar Controller Workshop **Morningstar Corp.**	Solar Roofing Best Practices **Quick Mount PV**	Product Training **Power-One**	System Introduction & Installation **SolarEdge**	Battery Installations - Do's & Don'ts of Grid Tie & Off-Grid Battery Based Systems **Rolls Battery**	2011 NEC Requirements for PV Systems Part 1 **Ryan Mayfield**

12:00 - 1:30 PM LUNCH IN EXHIBITOR AREA - ALUMNI CENTER

	RIVERSIDE HALL 1004	RIVERSIDE HALL 1006	RIVERSIDE HALL 1008	RIVERSIDE HALL 1010	RIVERSIDE HALL 2010	RIVERSIDE HALL 2013	RIVERSIDE HALL 1013
1:30 - 5:00 PM Coffee break from 3:00 - 3:30 PM in Riverside Hall	Conext Product and System Sizing Training **Schneider Electric**	Planning & Designing Grid Interconnected Battery Based Systems **Outback Power**	Advanced Desgin & Installation **Zep Solar**	Heat, Illness & Environment Harzards **Carlos Ramirez**	Roofing for Non-roofers **Tony Diaz**	Real World PV Performance **Mitsubishi Electric**	2011 NEC Requirements for PV Systems Part 2 **Ryan Mayfield**

5:00 - 6:30 PM RECEPTION IN EXIBITOR AREA - ALUMNI CENTER

6:30 PM BUSES START TO HOTEL

7:00 PM DINNER - AT DOUBLETREE HOTEL

Exhibitors & Presenters

AMERESCO SOLAR
Green • Clean • Sustainable

BURNDY

Wiley
Advancing Renewable Technology

15 YEARS Century 1996 - 2011

[e] enphase ENERGY

MAGNUM ENERGY

MITSUBISHI ELECTRIC
SOLAR INNOVATIONS

MORNINGSTAR

OnGrid SOLAR

Conference Schedule Sunday - March 10, 2013

7:15 AM BUSES START FROM HOTEL

8:00 AM - 12:00 PM REGISTRATION - ALUMNI CENTER

	RIVERSIDE HALL 1004	RIVERSIDE HALL 1002	RIVERSIDE HALL 1006	RIVERSIDE HALL 1008	RIVERSIDE HALL 1012	RIVERSIDE HALL 1010	RIVERSIDE HALL 1015
8:30 AM - 12:00 PM Coffee Break from 10:00 - 10:30 AM in Riverside Hall	Stand Alone & Battery Back-up Applications **SMA**	Electrical Hazards, Mitigation & the Qualified Person **Karl Riedlinger**	Changing Requirements and Challenges of the 2014 National Electrical Code **Ward Bower**	Commercial Scale Design and Implementation of Microinvertersg **Enphase**	Battery Installations - Do's & Don'ts of Grid Tie & Off-Grid Battery Based Systems **ROLLS Battery**	System Introduction & Installation **SolarEdge**	2011 NEC Requirements for PV Systems Part 1 **Ryan Mayfield**

12:00 - 1:30 PM LUNCH IN EXHIBITOR AREA - ALUMNI CENTER

	RIVERSIDE HALL 1004	RIVERSIDE HALL 1002	RIVERSIDE HALL 1006	RIVERSIDE HALL 1008	RIVERSIDE HALL 1010	RIVERSIDE HALL 2010	RIVERSIDE HALL 1015
1:30 - 5:00 PM Coffee break from 3:00 - 3:30 PM in Riverside Hall	Fall Protection for the Solar Industry **Joey Krys**	Conext Product and System Sizing Training **Schneider Electric**	Product Training **Power-One**	Roofing for Non-roofers **Tony Diaz**	Wiley Bonding & Grounding Systems **Burndy LLC**	Designing & Installing Smart Module Systems **Tigo Energy**	2011 NEC Requirements for PV Systems Part 2 **Ryan Mayfield**

5:00 PM BUSES START TO HOTEL

Exhibitors & Presenters

OutBack POWER member of The Alpha Group

power-one Renewable Energy Solutions

RENEWABLE Energy Associates

SCHLETTER

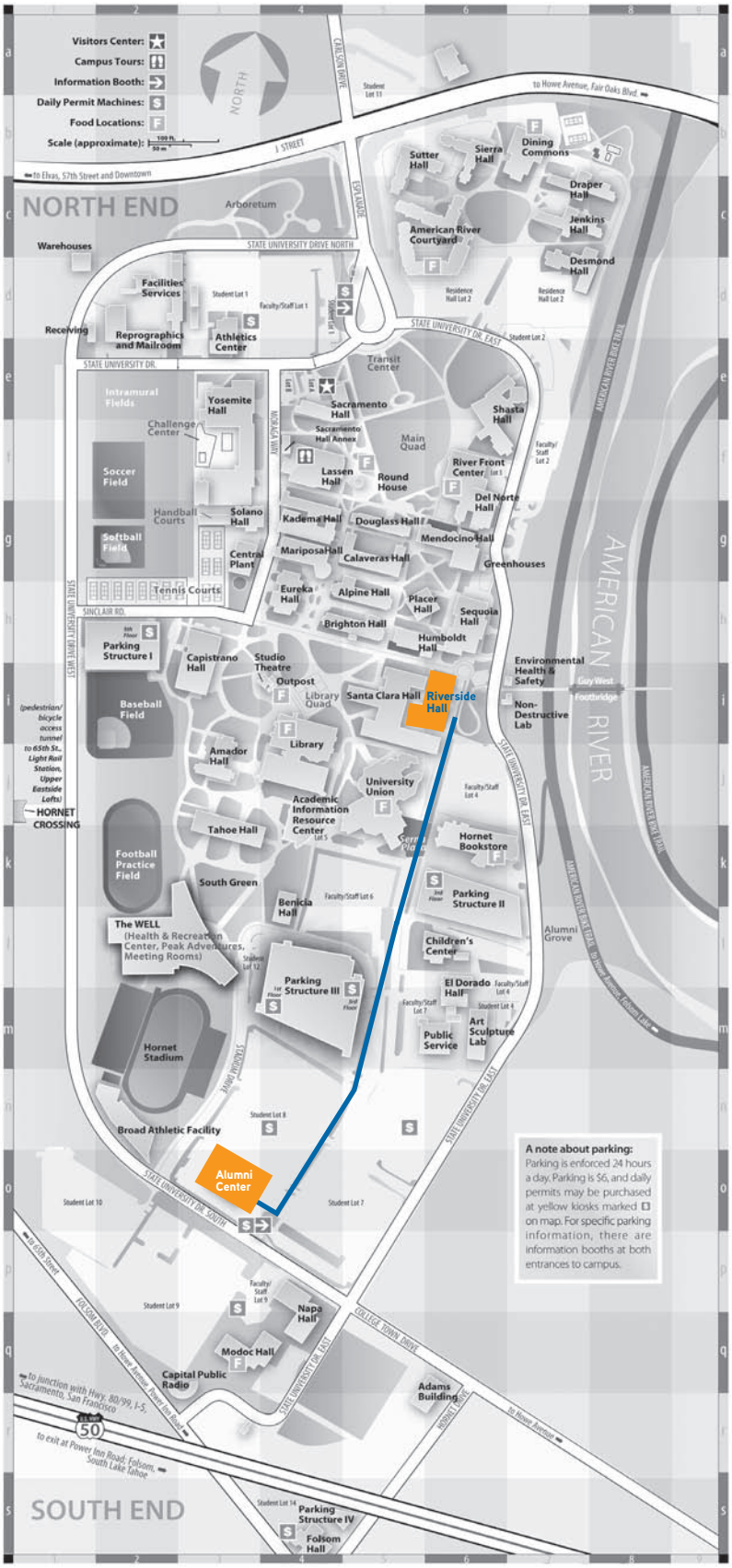
solaredge architects of energy

SOLECTRIA RENEWABLES

Tigo energy

ZepSolar

SACRAMENTO STATE



Getting Around

The Venue

The conference is held in two buildings on the University Campus. It takes about ten minutes to walk between the Alumni Center and Riverside Hall. Enjoy the fresh air and some time to stretch.

Alumni Center:
Opening remarks, exhibits, lunches and receptions.

Riverside Hall:
All training sessions and coffee breaks.

Parking

Parking is available at the Alumni Center. $6.00 on Friday and free on Saturday and Sunday. A parking pass is required.

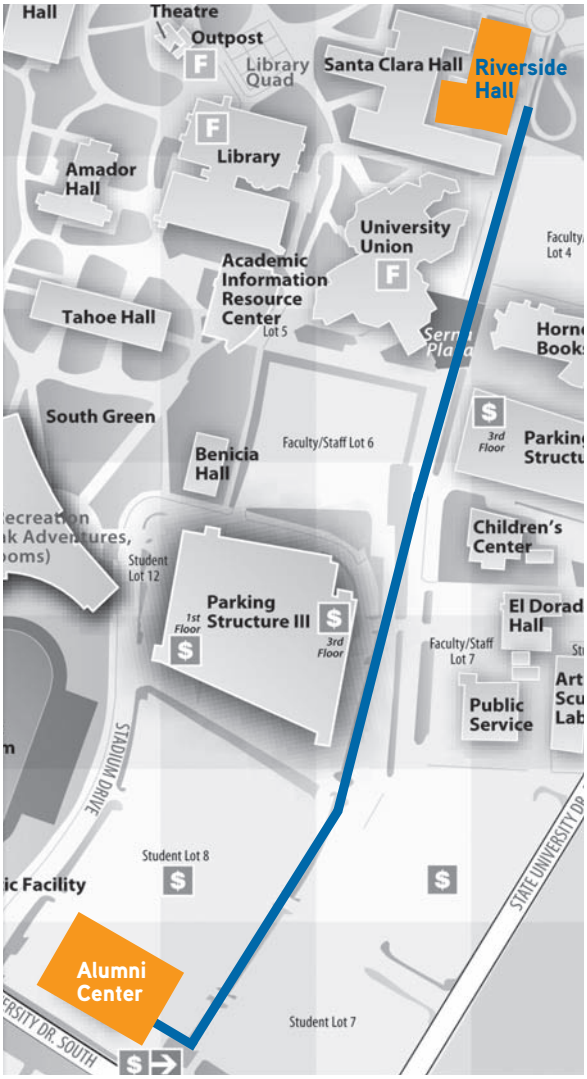
Buses

From Hotel to Alumni Center
Friday, Saturday and Sunday starts 7:15 a.m.

From Alumni Center to Hotel
Friday starts 8:00 p.m.
Saturday starts 6:30 p.m.
Sunday starts 5:00 p.m.

Registration

Registration opens at the hotel on Thursday evening and continues all day Friday and Saturday at the Alumni Center.



Saturday - March 9, 2013

Decentralized Commercial Applications

Greg Smith, SMA America, LLC
Saturday, March 9
8:30a – 12p
Riverside Hall 1004
3 CEU's

For the residential veterans out there, why not use what you already know to get in on those larger commercial bids? Instead of using a central inverter, it may make sense to take advantage of the decentralized concept and use several smaller Sunny Boy inverters or the Sunny Tower. Emphasis on commercial design and installation make this a "can't-miss" class. SMA highly recommends that you take the Sunny Boy 1 and 2 classes as a prerequisite. Rounding out the seminar is the Sunny Central Compact Power family of inverters that can be used in utility-scale applications.

Morningstar TriStar MPPT Solar Controller Workshop

Brad Berwald, Morningstar Corporation
Saturday, March 9
8:30a – 12p
Riverside Hall 1006
3 CEU's

This presentation will cover the detailed configuration, installation and use of Morningstar's TriStar family of MPPT controllers. We will also review the remote management and internet data acquisition functions of the products. This course will utilize the TEC-SMART computer lab for hands-on demonstrations.

Solar Roofing Best Practices

Johan Alfsen, Quick Mount PV
Saturday, March 9
8:30a – 12p
Riverside Hall 1008
3 CEU's

Maintaining roof warranties and installing quality products can protect your installation and also save you time on the roof. This class will cover best practices for roof penetrations, solar mounting and flashing systems.

Product Training

Jim Egan, Power-One
Saturday, March 9
8:30a – 12p
Riverside Hall 1010
3 CEU's

This course provides the knowledge needed for PV design engineers, contractors, installers, and product mangers to specify Power-One Aurora String and Central Inverters safely, accurately, and efficiently into their PV and Wind System designs. Attendees will learn about the entire Aurora String and Central Inverter product lines and unique features such as dual MPPT channels, wide range of field configurable settings and Power-One's superior engineering technology.

Introduction and Installation of the SolarEdge System

Jeff Laughy, SolarEdge
Saturday, March 9
8:30a – 12p
Riverside Hall 2010
3 CEU's

The introduction and installation of the SolarEdge System course includes the following subjects: system overview, product line review, safety features, monitoring server review, installation training, basic system debugging, NEC compliance, and service and diagnostic tools review.

Battery Installations – Do's & Don'ts of Grid Tie & Off-Grid Battery Based Systems

Steve Higgins, Rolls Battery
Saturday, March 9
8:30a – 12p
Riverside Hall 1012
3 CEU's

This course will provide an overview of the common mistakes and useful strategies for using deep-cycle batteries in grid tie and off grid residential and industrial applications with photovoltaic and other renewable energy sources.

2011 NEC Requirements for PV Systems: Part 1

Ryan Mayfield, Renewable Energy Associates, LLC
Saturday, March 9
8:30a – 12p
Riverside Hall 1013
3 CEU's

Designed specifically for PV professionals, this course will cover the major Code articles affecting PV installations, focusing on the 2011 NEC. Upon successful completion of this course, participants will have the ability to recognize and implement new Code requirements for PV systems.

Conext Product & System Sizing Training

Sandra Herrera, Schneider Electric
Saturday, March 9
1:30p – 5p
Riverside Hall 1004
3 CEU's

Learn about the Conext XW inverter/charger in a wide range of residential and small commercial applications including grid-tie, off-grid and backup power. Learn about the MPPT 80 600 solar charge controller's design characteristics. There will also be instruction in the system's installation. There will also be a brief introduction for the new Conext SW inverter.

Planning & Designing Grid Interconnected Battery Based Systems

LonesTuss, OutBack Power
Saturday, March 9
1:30p – 5p
Riverside Hall 1006
3 CEU's

In this session, attendees will be provided with planning and design tools for the installation of grid interconnected battery based system with OutBack Power's grid-interactive systems which can utilize solar, wind and hydropower sources.

Advanced Design & Installation Training

Chad Medcroft, Zep Solar
Saturday, March 9
1:30p – 5p
Riverside Hall 1008
3 CEU's

In a mix of fast-paced lab and lecture, students learn to identify and install key components of the Zep Solar platform including Zep-framed modules, Leveling Feet, Interlocks, Array Skirts, Ground Zeps, Wire Clips, Universal Box Brackets, and more on a mock roof. Using Zep's online Design Tool, the Zepulator™, students will learn the process to create Zep Solar layouts, produce comprehensive Bills of Material and engineering calcs for both standard and advanced designs. Students will learn to tune and troubleshoot installation challenges quickly and easily including irregular roof surfaces, non-standard rafter spacing, attachment points that coincide with module intersections, thermal expansion joints, slight variations in module dimensions, and more by applying Best Practices learned in class.

Heat, Illness & Environment Hazards

Carlos Ramirez, Solar City
Saturday, March 9
1:30p – 5p
Riverside Hall 1010
3 CEU's

As a member of the SEIA Safety Group, Carlos will cover the effects of various environmental factors that installers may be subjected to on the job and provide ways to mitigate them.

Roofing for Non-roofers

Tony Diaz, Century Roof & Solar
Saturday, March 9
1:30p – 5p
Riverside Hall 2010
3 CEU's

This course addresses the historical issues and challenges of adding solar equipment to both flat and slope roof platforms. This course will share the best practices known with the most recent advancements in mounting equipment combined with proven techniques and workmanship.

Real World PV Performance

Perry Rosenweig & Jim Kadaki,
Mitsubishi Electric
Saturday, March 9
1:30p – 5p
Riverside Hall 2013
3 CEU's

Solar industry insiders know that the heart of the PV system resides in the module and understand the difference between real world deployment and performance data generated in the laboratory: shading, light-induced degradation, STS vs. PTC, etc. Performance under real world conditions is a result of delicate interaction between the mechanical and electrical module components, how they are assembled, and environmental factors specific to the location of installation. Factors not immediately visible to the naked eye (i.e. diodes, strength of frame materials chosen, module mismatch) can be as influential in determining system yield as degradation caused by installation in corrosive environments. Modeling and yield measurement should be done accordingly. PV module performance in the real world means taking this totality of factors into account; system designers and installers need to adopt a more holistic approach to assessing the many elements which determine module output over time. This presentation will provide participants with a snapshot of these key factors, allowing for an accurate assessment of how PV modules will perform in the field.

2011 NEC Requirements for PV Systems: Part 2

Ryan Mayfield, Renewable Energy Associates, LLC
Saturday, March 9
1:30p – 5p
Riverside Hall 1013
3 CEU's

Designed specifically for PV professionals, this course will cover the major Code articles affecting PV installations, focusing on the 2011 NEC. Upon successful completion of this course, participants will have the ability to recognize and implement new Code requirements for PV systems.

Sunday – March 10, 2013

Stand Alone & Battery Back-up Applications

Mike Mahan, SMA America, LLC
Sunday, March 10
8:30a – 12p
Riverside Hall 1004
3 CEU's

Uncover the secrets of stand-alone and battery backup systems using SMA's Sunny Island battery inverter. Grid outages caused by hurricanes, winter storms or poorly run utilities will be no match for your AC-coupled system.

Electrical Hazards, Mitigation & the Qualified Person

Karl Riedlinger, SolarCity
Sunday, March 10
8:30a – 12p
Riverside Hall 1002
3 CEU's

Learn how to identify and mitigate electrical hazards with proper safety practices and have an OSHA compliant jobsite through the proper use of proper PPE, LOTO and implementing a Qualified Person program to keep workers safe. We will examine shock, arc flash hazards and protection boundaries as defined by NFPA 70E, selecting proper PPE, along with how and when to use Lock Out Tag Out procedures.

Changing Requirements and Challenges of the 2014 National Electric Code

Ward Bower, Eminent Scientist
Sunday, March 10
8:30a – 12p
Riverside 1006
3 CEU's

In this seminar Ward will bring his extensive experience of being in front of changes to the National Electric Code updates. Session attendees will learn how and when they make suggestions for changes to the National Electrical Code during its regular republishing cycle.

Commercial Scale Design & Implementation of Microinverters

Peter Lum, Enphase Energy
Sunday, March 10
8:30a – 12p
Riverside Hall 1008
3 CEU's

Enphase will offer comprehensive training covering Enphase's systems and technology, System Design and Installation, System Activation, Registration and Monitoring, and Basic and Advanced Communications design and installation.

Battery Installations – Do's & Don'ts of Grid Tie & Off-Grid Battery Based Systems

Steve Higgins, Rolls Battery
Sunday, March 10
8:30a – 12p
Riverside Hall 1012
3 CEU's

This course will provide an overview of the common mistakes and useful strategies for using deep-cycle batteries in grid tie and off grid residential and industrial applications with photovoltaic and other renewable energy sources.

Introduction and Installation of the SolarEdge System

Jeff Laughy, SolarEdge
Sunday, March 10
8:30a – 12p
Riverside Hall 2010
3 CEU's

The introduction and installation of the SolarEdge System course includes the following subjects: system overview, product line review, safety features, monitoring server review, installation training, basic system debugging, NEC compliance, and service and diagnostic tools review.

2011 NEC Requirements for PV Systems: Part 1

Ryan Mayfield, Renewable Energy Associates, LLC
Sunday, March 10
8:30a – 12p
Riverside Hall 1015
3 CEU's

Designed specifically for PV professionals, this course will cover the major Code articles affecting PV installations, focusing on the 2011 NEC. Upon successful completion of this course, participants will have the ability to recognize and implement new Code requirements for PV systems.

Fall Protection for the Solar Industry

Joey Krys, Professional Contractor Supply
Sunday, March 10
1:30p – 5p
Riverside Hall 1004
3 CEU's

Joey Krys will share his many years of experience as a certified trainer in providing a fall protection tips and techniques. This session will be a shorter version of his eight hour Competent Person training sessions.

Conext Product & System Sizing Training

Sandra Herrera, Schneider Electric
Sunday, March 10
1:30p – 5p
Riverside Hall 1002
3 CEU's

Learn about the Conext XW inverter/charger in a wide range of residential and small commercial applications including grid-tie, off-grid and backup power. Learn about the MPPT 80 600 solar charge controller's design characteristics. There will also be instruction in the system's installation. There will also be a brief introduction for the new Conext SW inverter.

Product Training

Jim Egan, Power-One
Sunday, March 10
1:30p – 5p
Riverside Hall 1006
3 CEU's

This course provides the knowledge needed for PV design engineers, contractors, installers, and product mangers to specify Power-One Aurora String and Central Inverters safely, accurately, and efficiently into their PV and Wind System designs. Attendees will learn about the entire Aurora String and Central Inverter product lines and unique features such as dual MPPT channels, wide range of field configurable settings and Power-One's superior engineering technology.

Roofing for Non-roofers

Tony Diaz, Century Roof & Solar
Sunday, March 10
1:30p – 5p
Riverside Hall 1008
3 CEU's

This course addresses the historical issues and challenges of adding solar equipment to both flat and slope roof platforms. This course will share the best practices known with the most recent advancements In mounting equipment Combined with Proven techniques and workmanship.

Wiley Bonding & Grounding Systems

Harley Haney, Burndy, LLC
Sunday, March 10
1:30p – 5p
Riverside Hall 1010
3 CEU's

In this interactive presentation, you will learn how to properly bond and ground your solar PV array on a variety of mounting systems using the BURNDY LLC Wiley WEEB technology. Project applications from residential to utility scale will be covered with best practices and where to easily install WEEBs and LUGs. In addition, wire management on systems will be covered.

Designing & Installing Smart Module Systems

Daniel Roberts, Tigo Energy
Sunday, March 10
1:30p – 5p
Riverside Hall 2010
3 CEU's

In this session you will learn about Tigo's SmartModule technology and Energy Maximizer system. You will also understand which PV arrays benefit the most using the Tigo Energy Maximizer system; the design options when using this system; how to install the Tigo Energy system and mobile management applications for iPhone and Android.

2011 NEC Requirements for PV Systems: Part 2

Ryan Mayfield, Renewable Energy Associates, LLC
Sunday, March 10
1:30p – 5p
Riverside Hall 1015
3 CEU's

Designed specifically for PV professionals, this course will cover the major Code articles affecting PV installations, focusing on the 2011 NEC. Upon successful completion of this course, participants will have the ability to recognize and implement new Code requirements for PV systems.

Conference Presenters

Johan Alfsen started as a solar installer in the San Francisco Bay Area in 2004. As a speaker, trainer, and author of articles on roof penetrations and code compliance for residential solar installations, Johan has become known industry wide for his passionate advocacy of solar roofing best practices. He sits on the Board of Directors for Roof Integrated Solar Energy (RISE) as well as the Resource Guide Committee for the North American Board of Certified Energy Practitioners (NABCEP). Johan holds a degree in Environmental Sustainability and Social Justice. Johan is also the founder of Solar Battle of the Bands, an annual industry networking event held concurrently with Intersolar in San Francisco.

Brad Berwald brings over 11 years of technical sales experience in the PV & Semi-Conductor industries to Morningstar Corporation. Brad joined Morningstar in 2002 as a Sales Engineer. His expertise in Managing Global Accounts, Technical Marketing & Training, IT & Networking, Database Management and Product Development has enabled him to grow and take on many new challenges at Morningstar. In his current role, Brad is helping Morningstar grow its international business and evolve its product portfolio to meet the evolving needs of the renewable solar energy market. Brad holds a BSEE and a Marketing-focused MBA from Alfred University.

Andy Black is CEO of OnGrid Solar. OnGrid provides financial analysis and sales software to solar installers to help them close more sales. Andy specializes in the financial payback of solar electricity systems. He holds a Masters in Electrical Engineering and a Certificate in Marketing. He is a NABCEP Certified Solar PV Installer emeritus. Andy is a Director of CalSEIA, an Advisory Board member of the NorCal Solar Energy Association, and a recent Director of the American Solar Energy Society.

Ward Bower retired from Sandia National Laboratories after 48 years of service. He led PV inverter, controller and balance-of-system R&D work since 1978. He is a principal member of Code Making Panel #4 for the National Electrical Code®. He is a member of the IEEE Standards Coordinating Committee (SCC21) for PV standards and Underwriter Laboratories Standards Review Committees for the UL; 1703, 1741 and 1699 standards. Ward currently serves on the NABCEP Board and is an active committee member. He has provided technical support for many projects and has authored more than 80 expert papers presented to the renewable energy industry.

Tony Diaz has more than 27 years of experience in the roofing industry and has been building PV systems since 2001. Tony is both a roofing contractor and an electrical contractor with the State of California and operates Century Roof and Solar out of the San Francisco Bay Area. Tony is a contract instructor for Solar Energy International. Recognized for his expertise in the Roof Tile, Built up, solar and composition shingle sector, Tony is factory-certified on many roof systems and is qualified to assemble and build composition, tile, shake, shingle, single ply PVC and PV solar-integrated roof tiles.

Jim Egan has over 25-years of experience in the commercial and residential industry as an electrical contractor. He holds three national certifications as an electrical inspector with International Association of Electrical Inspectors (IAEI) and National Fire Protection Association (NFPA). He is also an electrical section voting member of the NFPA for the National Electrical Code Since 1996 he has been involved in the renewable energy industry. Jim teaches credited courses, workshops and seminars at colleges and industry venues. He joined Power-One in 2011 and leads the Company's training program and customer support group.

Dr. Wolfgang Fritz, leads the engineering department of the North American operations for Schletter Inc. After receiving his Ph.D. from the University of Arizona and prior to joining Schletter, Dr. Fritz worked for 6 years as an engineering consultant, mainly on infrastructure development projects. He coordinates and performs all engineering design aspects of the solar mounting systems Schletter manufactures. Additionally, he holds professional engineering licenses in numerous states, is a member of the Civil Engineering Exam Development Committee with the NCEES, and serves on several national and international committees related to solar energy system design and installation.

Harley Haney has over 20 years experience in product safety and regulatory compliance. His responsibilities include engineering applications, product design, project management and business development in the PV arena. Harley has technical expertise in Codes and Standards and is an active member on two of UL's Standards' committees: UL 1703 for PV Modules and UL 2703 for PV Racking Systems focusing on bonding and grounding requirements. Prior to his role at Burndy, Mr. Haney held positions at Wiley Electronics, Mitsubishi and UL and has earned a Bachelor's degree in Electrical Engineering as well as a Master's degree in Business Administration

Sandra Herrera enjoys assisting customers every day to overcome technical solar challenges. With her expertise and experience in single- and three-phase solar systems, she has helped countless customers within the two years of working for Schneider Electric! Sandra has been happy in the dynamic renewable energy industry for the past nine years, and sees great potential with solar applications in developing nations. She also finds happiness SCUBA diving in Puget Sound.

Steve Higgins, Technical Services Manager with Rolls Battery Engineering, has been in the Renewable business since 1995 with companies such as Trace Engineering, Xantrex, and Outback Power Technologies. Over the last 18 years Steve has traveled all over the world helping design and troubleshoot, and repair battery based installations. Steve has extensive experience teaching design, operation and troubleshooting of battery based renewable energy systems.

Jim Kadakia is a Sr. Engineering Manager in the Photovoltaic Division of Mitsubishi Electric US, Inc. He is responsible for all technical matters related to Mitsubishi Electric solar products and their installation. Jim has a masters degree in electrical engineering and is licensed as a professional engineer in the state of California. He has more than 30 years experience in leading technical teams for product development and project management as related to inverters, electrical systems, motor controllers, UPS, power electronics, refinery electrical systems, turbines, battery back-up for traffic intersections and cell towers.

Joey Krys is a fall protection expert operating out of the San Diego, California area. He has 30 years experience in sales and safety training. Joey provides training to many groups and institutions including the UCSD OSHA Institute; the US Military; Associated General Contractors; Associated Builders and Contractors. He has specialized in fall protection for the solar industry for the past six years and besides training he has developed products specific to the industry. When he is not training, he is conducting outside sales at Professional Contractor Supply.

continued

Conference Presenters continued

Jeff Laughy has been working in renewable energy power electronics for over 16 years. He has held avariety of design and engineering positions at Kenetech Windpower, Trace Technologies, Xantrex, CiscoSystems, SMA America, Enphase Energy, and SolarEdge Technologies. His experiences include inverter design for wind and hybrid power generation technologies and application engineering ranging from micro up to mega-Watt grid tie Photo Voltaic systems.

Peter Lum is a technical training professional with over 20 years of technical experience in hi-tech and renewable energy. Peter develops and delivers training at Enphase Energy as the senior trainer has also managed and delivered technical training at Fat Spaniel Technologies. He also is a Assistant Professor in the California college system where he teaches Solar technology, Design, and Sales.

Mike Mahon is a technical training specialist with the SMA Solar Academy, delivering in-person training and webinars covering SMA products and the basics of photovoltaics. Prior to joining SMA in 2011, Mike taught NABCEP Entry Level Exam preparation and PV installation and design classes for private firms and also to members of the Los Angeles Conservation Corps. Mike studied chemical and electrical engineering, and has worked in the energy industry since 1998.

Ryan Mayfield has been working in the renewable energy field since 1999 and is the President of Renewable Energy Associates, a Corvallis, Oregon, consulting firm providing design, support and educational services for electrical contractors, architectural and engineering firms, manufacturers and government agencies. Ryan serves as Photovoltaic Systems Technical Editor for SolarPro magazine, regularly writes feature articles in SolarPro and Home Power magazines and wrote PV Design and Installation for Dummies. Ryan was also a contributor and video team member for Mike Holt's Understanding the NEC Requirements for Solar Photovoltaic Systems.

Chad Medcroft brings over 10 years of experience to Zep Solar. He was instrumental in developing an industry leading IREQ accredited training program and field quality assurance program. He has also worked as Technical Sales Manager at Fronius USA and as a Designer, Installer and Sales Manager for some leading PV integrators. At Zep, Chad manages the Applications Engineers, Technical Support, Training and Field Applications Engineers. In this role he is able to share his experiences and passions for renewable energy education, innovative design and PV system quality to a network of designers and installers in the US and Internationally

Carlos Ramirez, Senior Director, Environmental Health and Safety at SolarCity has twenty years of construction safety and risk management experience. Carlos is an OSHA Certified Trainer and an expert in incident accident investigations. Carlos has built safety programs for a variety of business and has consulted with many of the fortune 100 companies in the construction industry. He has authored a number of trade related safety publications and spoken at a number of Risk and Safety conferences over the years. Carlos has designed a variety of fall protection systems and is a qualified person in fall protection, confined space and rigging and hoisting. Carlos is working to bring the solar Industry's concerns to the attention of both Cal-OSHA and Federal OSHA.

Karl Riedlinger is the Commercial Safety Manager at SolarCity and is serving as Chairman of SEIA's Installer Safety and Workforce Development Working Group. Prior to joining SolarCity Karl was a construction manager for large commercial solar installations at Powerlight Corp and an R&D Mechanical Engineer in the aerospace industry. Karl holds a bachelor's degree in Mechanical Engineering, is a California licensed general electrician and is NABCEP certified in PV Installation and Technical Sales.

Daniel Roberts is the Systems Engineering Manager for Tigo Energy and specializes in PV system design for residential to utility scale systems. While at Tigo, Roberts has worked as a field engineer installing monitoring systems for PV research and developing products for the PV sector. Previously, Roberts spent six years working as an Electrician and Electical Foreman before transitioning into the Renewables sector in 2009.

Dick Roberts is currently a Senior Safety Engineer for the Research and Standards Development Unit of the Division of Occupational Safety and Health (DOSH). Dick started with the Division in 1993 worked in a number of District Offices throughout California. In 1999, Dick was promoted to Senior Safety Engineer and was assigned to the Professional Development and Training Unit. After a short retirement, Dick returned to the Division as the Senior Safety Engineer for the Targeted Inspection Unit, Region VI, and in 2009 transferred to his current position.

Perry Rosensweig is a Business Development manager in the Photovoltaic Division of Mitsubishi Electric US, Inc. He is responsible for selling photovoltaic modules, residential kits, and complete DC side commercial solutions through a variety of system integrator and developer customers. Prior to Mitsubishi Electric, Mr. Rosensweig worked for KN Energy, Inc. (now Kinder Morgan, Inc), a natural gas provider, and served as a consultant to the U.S. Department of Energy. Mr. Rosensweig earned a law degree from Tulane University and is a Certified Energy Manager (CEM) through the Association of Energy Engineers.

Alan Santos-Buch provides technical sales, training and support at Magnum Energy Inc. He is also a managing partner at Solar Power Fit, LLC. For a number of years Alan worked on solar power projects and Power Purchase Agreements with commercial building owners.

Greg Smith is a technical training specialist for the SMA Solar Academy, where he develops curriculum and performs on-site seminars and webinars about SMA products, code compliance and installation best practices. Smith, who holds a master's degree from Central Michigan University, spent 20 years in the U.S. Navy, most recently as a submarine sonar technician and master training specialist.

Lones Tuss has five years experience at OutBack Power, as an Applications Engineer who specializes in providing training to installers, distributors and end users. He has 26 years of electrical experience, with the past twelve dedicated to solar energy. Lones currently lives on Gedney Island in Puget Sound, where he "practices what he preaches" by using a grid-interactive battery back up system.

Don Warfield has been working in the photovoltaics business for the past 35 years. Starting in product development and aerospace manufacturing, Don has spent the past two decades involved in module product development and applications engineering of PV modules and their associated BOS components, ranging through initial design, certifications, manufacturing, installation and customer training. He currently works for Ameresco Solar. Don currently serves on the STP for UL1703 and UL1741, and working groups 2, 3 & 6 (modules, BOS and systems) of the IEC's technical committee 82. He is currently the chair of the Solar ABCS advisory committee and the Chairperson of the NABCEP Board of Directors.

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