U.S. DEPARTMENT OF ENERGY | Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

SOLAR ENERGY TECHNOLOGIES OFFICE

Solar Energy Technologies Office

Building a Resilient Community Using Distributed Energy Resources – **Day One**

energy.gov/solar-office

Systems Integration (SI) & Strategic Analysis and Institutional Support (SAIS) Teams

Workshop Agenda – Day One

Time [EST]	Session	Presenters
12:00 – 01:00	**Introduction to DOE Resilience Efforts** • Solar Energy Technologies Office • Office of Electricity	• Shay Banton (SETO-SI, Technology Manager) • Dr. Becca Jones-Albertus (SETO, Director) • Michele Boyd (SETO-SAIS, Program Manager) • Stephen Walls (OE-ETI, Program Lead)
01:00 – 01:30	*Break*	
01:30 – 02:30	**Panel: Valuing Resilience**	• Dr. Michael Kintner-Meyer (PNNL, Research Engineer) • Dr. Robert F. Jeffers (SNL, Principal Systems Scientist) • Kiera Zitelman (NARUC, Senior Manager) • Wilson Rickerson (Converge Strategies, Principal)
02:30 – 03:45	**Interactive Breakout Groups**	• SETO Moderators
03:45 – 04:00	*Break*	
04:00 – 04:45	**Presentation Series**	• Michelle Moore (Groundswell, Chief Executive Officer) • Dr. Fei Ding (NREL, Senior Research Engineer)
04:45 – 05:00	**Day One Closing**	• SETO Moderators

What is Electricity Resilience?

The ability to prepare for and adapt to changing conditions and withstand and recover rapidly from disruptions such as deliberate physical and cyberattacks, accidents, or naturally occurring threats and incidents.

GRID RESILIENCE focuses on the technologies, solutions, and analyses to mitigate the impacts to electric power infrastructure resulting from ***infrequent yet large-consequence events***.

DISTRIBUTION GRIDS are particularly vulnerable to outages that can impact many local communities where critical infrastructures such as emergency shelters or hospitals rely on electric service to function.

Note: Resilience to <u>cyberattacks</u> will not be covered in this workshop

Solar's Role in Enhancing Grid Resilience

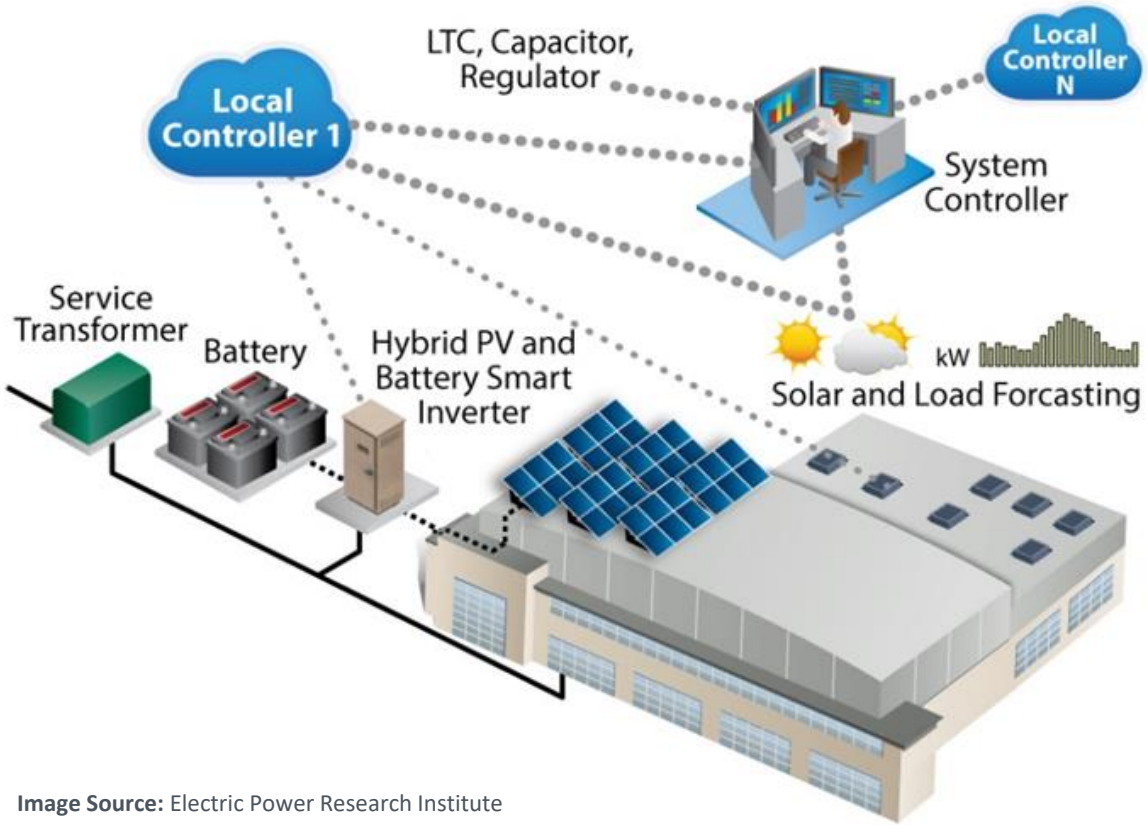


Image Source: Electric Power Research Institute

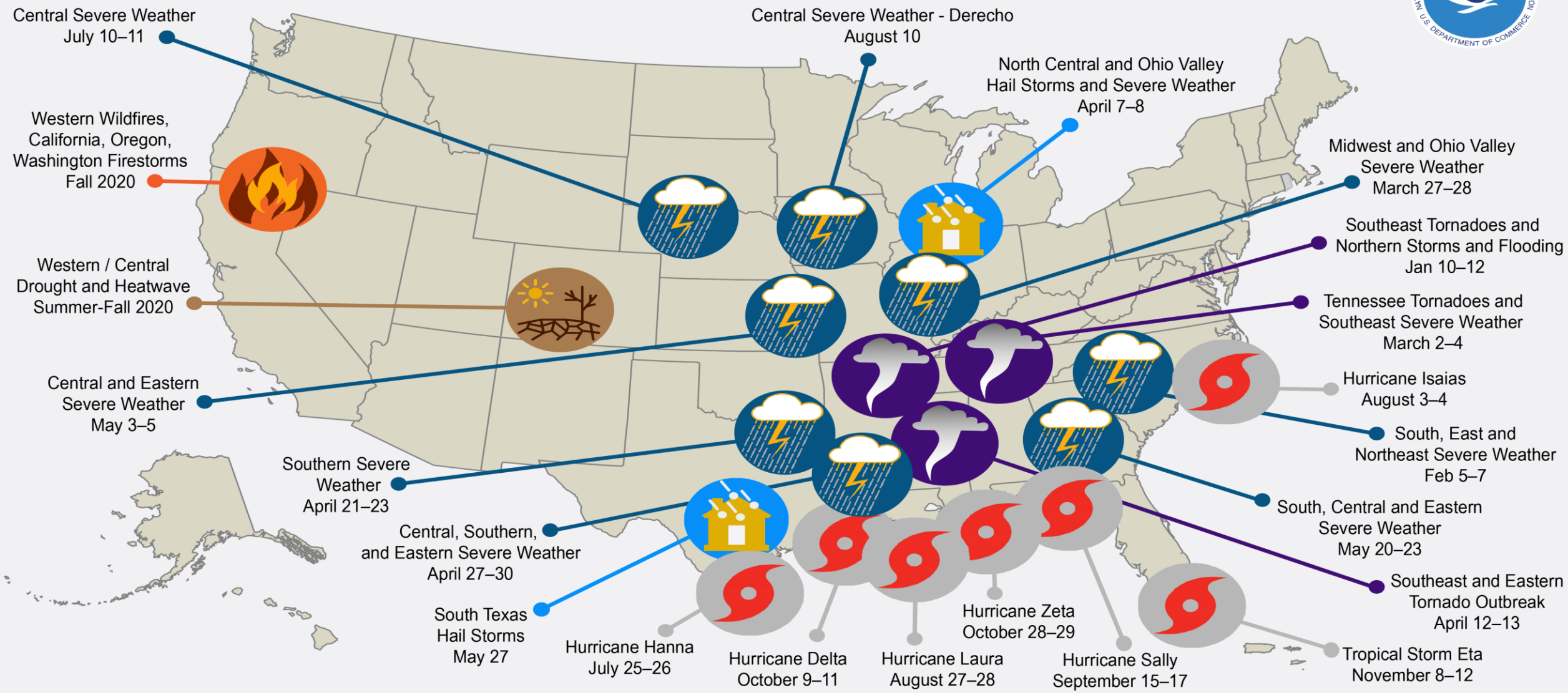
Through coordinated control and enhanced communication capabilities, Solar and DER inverters can:

- …restart power on segments of the distribution system during an outage
- …minimize the impact of outages by localizing power generation with microgrids
- …implement fast-responding power electronics to provide blackstart capabilities

Why are we talking about resilience?

Due to climate change, the frequency and magnitude of climate disaster events are increasing making it more important than ever to ensure essential services can withstand a variety of large-consequence events.

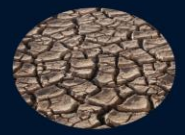
U.S. 2020 Billion-Dollar Weather and Climate Disasters



*This map denotes the approximate location for each of the **22 separate billion-dollar weather and climate disasters that impacted the United States during 2020**.*

Image SourceNOAA National Centers for Environmental Information (NCEI) U.S. Billion-Dollar Weather and Climate Disasters (2021). https://www.ncdc.noaa.gov/billions/, DOI: 10.25921/stkw-7w73

Billion-Dollar Disasters BY THE NUMBERS (1980–2020)


DROUGHT


FLOODING


FREEZE


SEVERE STORMS


TROPICAL CYCLONE


WILDFIRE


WINTER STORM

For more info:
www.ncdc.noaa.gov/billions/

1980 The year NOAA started tracking billion-dollar disasters

22 Number of U.S. billion-dollar disasters in 2020—the most on record

285 Number of billion-dollar disasters in the U.S. since 1980

7 Number of billion-dollar tropical cyclones that struck the U.S. in 2020

50 Number of states that have had at least one billion-dollar disaster

119 Number of billion-dollar events from 2010-2019

7.0 Average number of billion-dollar disasters per year since 1980

$1.875 TRILLION Total cost of the 285 billion-dollar disasters

15.1 Average number of billion-dollar disasters per year since 2015

124 Number of billion-dollar disasters that have impacted Texas since 1980—the most of any state

Image SourceNOAA National Centers for Environmental Information (NCEI) U.S. Billion-Dollar Weather and Climate Disasters (2021). https://www.ncdc.noaa.gov/billions/, DOI: 10.25921/stkw-7w73

What are our goals for this workshop?

Receive crucial feedback from essential stakeholders like you on our current research efforts in the implantation of DERs on EPS resilience.

We need your help in answering questions such as:

- How do key stakeholders like you *value* resilience?
- What role does *equity* play in resilience planning and restoration efforts?
- What *technical barriers* still prevent the utilization of DERs in grid resilience?
- What guidance is needed from SETO to support your resilience *planning and coordination* efforts?
- What *gaps* are we not addressing in our current research?
- What *direction* would you like to see our resilience research go?

Workshop Moderators

David Walter
SI, Technology Manager

Ruchi Singh
SAIS, Technology Manager

Michele Boyd
SAIS, Program Manager

Danny Sodano
SAIS, Technology Manager

Shay Banton
SI, Technology Manager

Dr. Guohui Yuan
SI, Program Manager

Dr. Marissa Morales-Rodriguez
SI, Technology Manager

Dr. Rodney Kizito
SI, Technology Manager

Dr. JJ Dai
SI, Technology Manager

Andrea Crooms, J.D.
Operations Supervisor

Dr. Becca Jones-Albertus, SETO

Dr. Jones-Albertus is the Director of the U.S. Department of Energy's Solar Energy Technologies Office (SETO). Dr. Jones-Albertus also works with DOE leadership on key cross-cutting issues such as grid modernization, systems integration, and workforce training.

She has spent her career advancing solar technology, from fundamental research and development to manufacturing. Her research roles have spanned academia, industry, and the national labs. She has been at SETO since 2013, serving first as the photovoltaics program manager and then as SETO's deputy director. Dr. Jones-Albertus also works with DOE leadership on key cross-cutting issues such as grid modernization, systems integration, and workforce training.

Michele Boyd, SETO-SAIS

Michele Boyd is the program manager of the Strategic Analysis and Institutional Support (SAIS) team in the Solar Energy Technologies Office (SETO). The team supports the development of analysis, tools, and data resources to reduce the non-hardware (soft costs) of solar energy and accelerates learning through technical assistance programs and national partnerships.

Michele joined SETO in April 2016 as a technology manager on both the soft costs and the technology to market teams. Previously, Michele was the government relations manager at Abengoa Solar, where she developed and implemented strategies to advance effective financing, siting, and transmission policies for solar. Prior to her work on solar, Michele focused on environmental and policy issues related to nuclear weapons, nuclear power, and nuclear waste at Physicians for Social Responsibility, Public Citizen, and the Institute for Energy and Environmental Research.

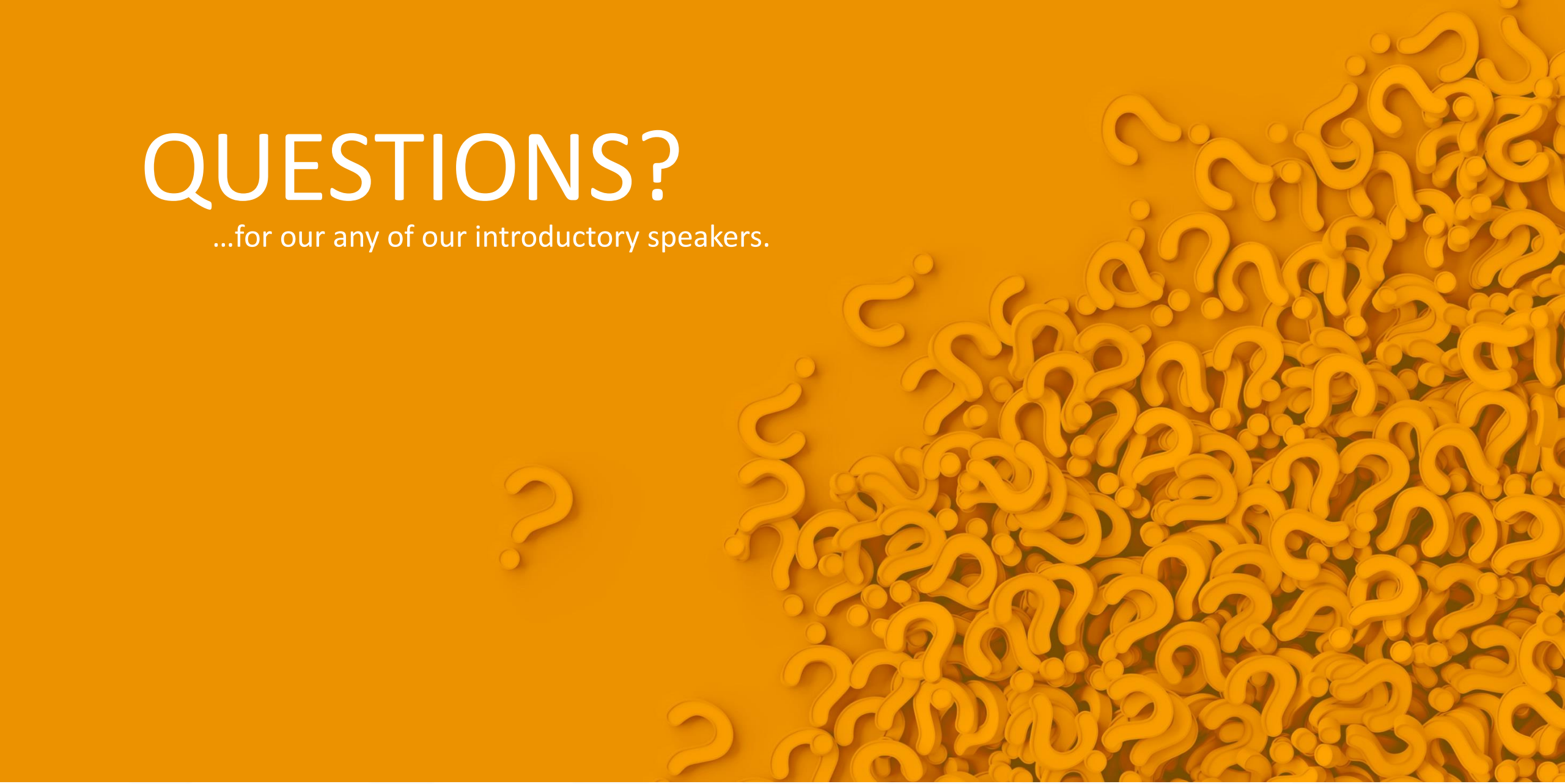
Stephen Walls, OE

Stephen Walls, Esq., has been at the U.S. Department of Energy (DOE) since 2011, where he helped create the Energy Transitions Initiative. This portfolio focuses on improving the energy security of island and remote grids of the United States. He was the lead content developer for the Islands Playbook published in early 2015 (https://www.energy.gov/eere/about-us/energy-transitions-initiative).

Stephen is currently in the Office of Electricity supporting federal recovery efforts related to Hurricanes Maria and Irma, after serving as an ESF-12 responder for those events. Before his work with DOE, Stephen worked in global government relations and capital markets for a Fortune 50 company. He earned a J.D. with honors from The George Washington University Law School in Washington, D.C., and undergraduate degrees in Economics and International Relations from the University of Delaware.

QUESTIONS?

…for our any of our introductory speakers.



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Panel: Valuing Resilience

*How do key stakeholders like you **value** resilience?*

Dr. Michael Kintner-Meyer
PNNL, Research Engineer
Pronouns: he/him

Dr. Bobby Jeffers
SNL, Principal Systems Scientists
Pronouns: he/him

Kiera Zitelman
NARUC, Senior Manager
Pronouns: she/her

Wilson Rickerson
Converge Strategies, Principal
Pronouns: he/him

QUESTIONS?

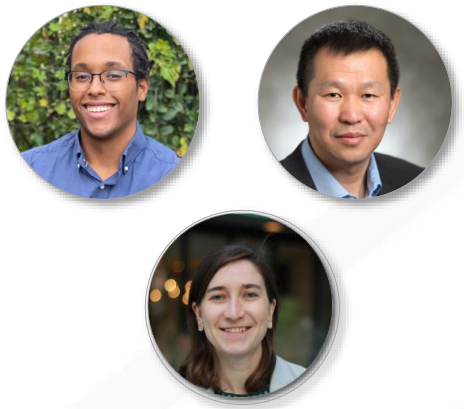
…for the Valuing Resilience panelists.

Interactive Breakouts: Valuing Resilience

*How do key stakeholders like you **value** resilience?*

You will now be placed into pre-assigned breakout groups led by the following moderators and panelists. You will have approximately 60 minutes to discuss the prompts provided.

Group 1



Group 2

Group 3

Group 4

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Presentation Series:

*What role does **equity** play in resilience planning and restoration efforts?*

Michelle Moore

Groundswell, CEO,
Pronouns: she/her

Presentation Title:

Resilience: Reparative, Restorative – Equitable Approaches to Project Development

*What **technical barriers** still prevent the utilization of DERs in grid resilience?*

Dr. Fei Ding

NREL, Senior Research Engineer

Presentation Title:

Grid-Edge Energy Resources to Shape Resilient Community Microgrids

You will now be able to select a breakout session to join. Presentations will last approximately 30 minutes with 15 minutes dedicated to Question and Answer.

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Thank You!

For any remaining workshop questions, please email:
solar@ee.doe.gov