



**TESC 2020**  
**Transactive**  
**Energy**  
**Systems**  
Conference and Workshop  
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# 7-10 DECEMBER 2020

## Conference Day 1 - Tuesday, December 8, 2020

### Session 1

**8:00am - 10:00am PST**

Welcome & DOE Keynote Panel

Speakers: Chris Irwin, Erika Gupta, Alejandro Moreno

GWAC Foundational Session: Architecting a Resilient, Transactive Grid

Speakers: GWAC members

### Session 2

**10:30am - 12:00pm PST**

Drivers of Change Workshop: Profound changes to our energy system are being driven by decarbonization, distributed systems, expansion of distributed energy resources, the advancement of related technologies, and now a global pandemic. What are primary drivers of change and where will they impact the future of an integrated grid at all scales? How big will the transformation be in the near and long term?

**Moderators:** Ron Cunningham, David Forfia

#### **Presentations:**

What if We Build it and Nobody Comes?

Transactive Community Microgrids to Share Energy Storage Resources in Portugal

Pruning the tree, decarbonizing the grid by electrifying and reducing GHG one branch at a time

#### **Speakers**

Hal T. Nelson, Portland State U.

Pedro Moura, Univ of Coimbra

Tanya Barham, GWAC member, Community Energy Labs

### Session 3

**12:30pm - 2:00pm PST**

System Design & Architecture Workshop: What steps are needed to support the transition from a centralized to a decentralized grid based on highly coordinated self-optimization? How does the electric grid integrate with other infrastructures like water and gas through smart buildings and smart cities? How can Grid Architecture accelerate pragmatic action?

**Moderators:** Gerald Gray, Ron Bernstein

#### **Presentations:**

Blockchain-Enabled Transactive Energy System Design

AI Standards for Transactive Energy

Large Scale Simulation of a Regional Transactive Energy Marketplace Implementation

#### **Speakers:**

Umit Cali, NTNU

Ken Wacks, Management and Engineering Consultant

Hayden Reeve, PNNL

## Conference Day 2 - Wednesday, December 9, 2020

### Session 1

#### 8:00am - 9:30am PST

System Implementation Strategies & Examples Workshop: In recent years, a number of states, municipalities, utilities, NGO's and corporations have engaged in putting transactive energy theory into practice around the globe. This topic will revisit some of these implementations, the lessons learned, and discuss the interdependence of the electric grid and the communication networks that are necessary to monitor and coordinate actions on the grid and how to build explicit, well-defined, trust models that define identity, authentication, service-level agreements, and privacy into TE systems.

**Moderators:** Aaron Snyder, Stuart McCafferty

#### **Presentations:**

Price as a metric of Coordination in a Layered Decomposition Approach

A Game-Theory Based Analysis of the Effects of Energy-Storage System Utility Strategies on the Short-Term Energy Market

Enabling Plug and Play Transactive Energy on Legacy Power Grids

#### **Speakers:**

Trevor Gionet, Introspective Systems

Renison Macwan, LD College of Engineering

Michael Hammersley, Protocol Labs Research

### Session 2

#### 10:00am - 11:30am PST

Business Models and Value Realization Workshop: What does it take to create value for participants? How do different systems assign risk, cost and value to stakeholders? What do our transactive energy systems incentivize? Where should the focus be for the next transactive system implementations?

**Moderators:** Andrew Bordine, Leonard Tillman

#### **Presentations:**

Reliability and Resilience Considerations for Transactive Energy Systems

The Value of Forward Markets for Provision of Building Flexibility to the Grid

Pricing Capacity - an application of Price Discrimination Strategies to Capacity Markets in the Context of DERS

#### **Speakers:**

Farrokh Rahimi, GWAC member, OATI

David Holmberg, NIST

Sumittra Ganguli, PNNL

### Session 3

#### 12:00pm - 2:00pm PST

Virtual Paper/Poster Session with Live Chat

## Conference Day 3 - Thursday, December 10, 2020

### Session 1

#### 8:00am - 9:30am PST

Resilience Workshop: Some qualities of the power system by their nature improve the resilience of the system, and these qualities may be provided by transactive or non-transactive systems. What resilience benefits can a flexible and adaptive grid provide by incorporating transactive systems?

**Moderators:** Ron Ambrosio, Ron Melton

#### **Presentations:**

Functional Form of Power System Resilience to Facilitate Transactive Energy Systems Design

Improving System Resiliency Using Transactive Mechanism for Distributed Black-Start

#### **Speakers:**

Sarmad Hanif, PNNL

Bishnu Bhattarai, PNNL

**Session 2**

**10:00am - 11:30am PST**

Regulatory and Policy Workshop: How do legislation and regulation support or limit transactive energy implementations today? What's working well? What changes are needed and what should the industry do to encourage alignment of policy and regulatory measures to create a more flexible and interactive grid?

**Moderators:** Kay Aikin, Lorenzo Kristov

**Presentations:**

The Need for a Regulatory Framework for Grid Transformation  
Policy Planning for Cost Effective Grid Transformation in TE Systems  
What Regulators Want from Grid Modernization and TE System Proposals

**Speakers:**

Lorenzo Kristov, GWAC  
Chris Nelson, South Dakota PUC  
Abigail Anthony, Rhode Island PUC

**Session 3**

**12:00pm - 2:00pm PST**

Visions for Participation Workshop: A future grid will have many transactive systems and may include buildings, microgrids, campuses, smart cities and active residential participation. What models for participation will be possible and necessary?

**Moderators:** Tanya Barham, Lorenzo Kristov

**Presentations:**

Integrating Economics into Transactive Energy's Theoretical Framework

TE Conceptual Model

The Energy Services Interface as a Transactive Interface for EV Grid Service Provision

**Speakers:**

Lynne Kiesling, Director, Institute for Regulatory Law & Economics at Carnegie Mellon University  
Mark Knight, 1898 & Co., part of Burns & McDonnell  
David Holmberg, NIST

**Conference Closing Session**

David Forfia, GWAC Chair