

# **Transactive Energy**

# **Public Policy and Market Design**

GWAC Transactive Energy Conference  
May 23, 2013

Edward G. Cazalet  
CEO, TeMix Inc.  
[ed@temix.com](mailto:ed@temix.com)

# What is Transactive Energy?

1. Policy: Transactive Energy engages customers and suppliers in decentralized energy transactions that strive towards economic efficiency, reliability, and environmental enhancement.
2. Market: Transactive Energy is a business process for energy transactions among parties.

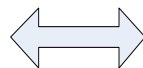
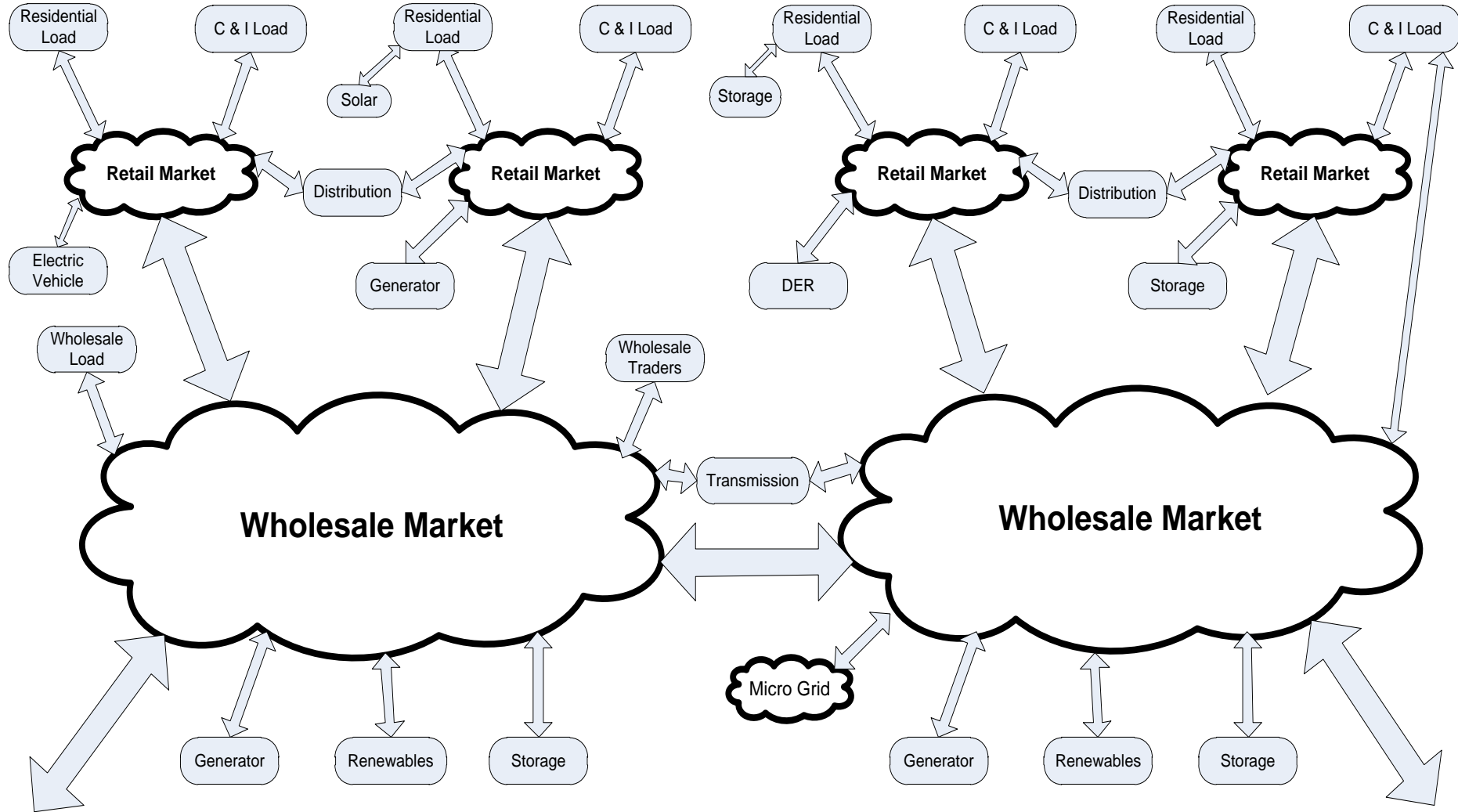
# Transactive Energy Policy

1. Sustainable energy: efficiency, reliability, renewables, and resilient decentralized generation
2. Coordinated decentralized investment and operation decisions
3. Parties and their automated agents control their own devices, facilities, T&D, etc. and not those of other parties
4. Comprehensive market oversight

# Transactive Energy Market Design

1. Simple Products: Subscriptions for Energy and Transport (T&D)
2. Simple Forward Transactions:  
(Price, Quantity, Start, Duration, Interface, Side)
3. Coordination by mutually beneficial forward tenders and transactions among parties
4. Market Clearing: peer-to-peer, bilateral, retail tariff, or exchange

# Transactive Energy Markets



# Two Examples

1. Transactive Retail Subscription Tariffs
2. Five-Point Transactive Energy Policy

# Transactive Retail Subscription Tariffs

1. Retailer makes forward buy and sell tenders for subscriptions to customers
2. Customer agent accepts or ignores tenders as transactions for subscriptions
3. Repeat 1 & 2 as necessary
4. Delivery imbalance: metered quantity less accumulated subscription quantity for each settlement interval paid or credited at variable ex-post price

(see [www.CalFER.org](http://www.CalFER.org))

# Five-Point Transactive Energy Policy

1. Legislature/ PUC: allow retail energy and distribution subscription tariffs
2. FERC/ ISO or RTO:
  - \$10,000/MWH wholesale price cap
  - -\$2,500/MWH wholesale price floor
  - post forward buy and sell 5-minute and 15-minute tenders
3. Legislature/PUC: locational retail prices



# Five-Point Transactive Energy Policy

4. PUC: deploy current surplus, decentralized generation /storage, and flexibility from transactive tariffs before new centralized capacity
5. Legislature/PUC/FERC:
  - accelerate competitive access
  - aggressively monitor markets

# Transactive Energy Links

1. OASIS eMIX <http://bit.ly/11CZs6O>
2. OASIS Energy Interop <http://bit.ly/1585fQO>
3. Automated Transactive Energy (TeMix) <http://bit.ly/1580gPS>
4. Transactive Device Architecture <http://bit.ly/U8tydX>
5. Draft Transactive Energy US Roadmap <http://bit.ly/X1lw6x>
6. Transactive Energy Association (TEA) [www.tea-web.org](http://www.tea-web.org)
7. TeMix Inc. [www.temix.com](http://www.temix.com)

# TEA Discussion Links

## 1. INTRODUCTION TO TRANSACTIVE ENERGY:

What is Transactive Energy? <http://lnkd.in/EUqVy3>

Transactive Energy Description and Benefits <http://lnkd.in/NGwdsZ>

## 2. TRANSACTIVE RETAIL TARIFFS:

Which Should Come First, Customer Automation or Transactive Energy Tariff?

<http://lnkd.in/8adFp5>

Transactive Energy for ERCOT Retail Markets <http://lnkd.in/7cneEh>

Transactive Energy for California IOU Tariffs [http://lnkd.in/wZ\\_pHm](http://lnkd.in/wZ_pHm)

## 3. TRANSACTIVE ENERGY FOR THE END-TO-END GRID:

How Will Transactive Energy Assist the California Grid? <http://lnkd.in/ycgFPM>

Transactive Energy and Ancillary Services <http://lnkd.in/idDTU3>

## 4. TRANSACTIVE SUBSCRIPTIONS FOR T&D AND FIXED COSTS:

Transactive Energy Recovery of Fixed Costs <http://lnkd.in/-a6RuV>

Transactive Energy and Net Energy Metering <http://lnkd.in/WreWmi>

# TEA Discussion Links

## 5. RELIABILITY AND CONTROL:

Does Transactive Energy Need Capacity Products? <http://lnkd.in/e498JX>

Transactive Energy and Control/Management <http://lnkd.in/62qnUa>

Transactive Energy and Grid Reliability and Adequacy <http://lnkd.in/uSWzqz>

## 6. CUSTOMER BENEFITS:

Where is the Value for the Customer? <http://lnkd.in/humHrh>

Is It Worth It? <http://lnkd.in/SgGh63>

Smart Devices and Transactive Energy Spot Prices <http://lnkd.in/fCswB7>

## 7. RELATED TOPICS:

Transactive Energy and Peer-to-Peer Home Energy <http://lnkd.in/zfcuAk>

How Does TE Deal With Issues Such as Coal Externalities? <http://lnkd.in/XyvgQf>

From EISA 2007 to Transactive Energy <http://lnkd.in/m6aVmU>

Transactive Energy and the Smart Toaster <http://lnkd.in/nvsHd4>