



**MICROGRID  
KNOWLEDGE**

*Virtual Conference*

# How Microgrids Make Money:

*A Tutorial on Transactive Energy, Ancillary Services, Demand Response and Other Ways Microgrids Earn Their Keep*

# Agenda

**Moderator:** Brian Curtis (Concentric Power)  
CEO

## Speakers:

1. Kay Aikin (Introspective Systems) CEO and Co-founder
2. Doug Sansom (NRG Energy) Director, National Accounts and Wholesale Origination
3. Jacqueline DeRosa (Ameresco) Vice President of Energy Storage

## Resources:

- Speaker Bios
- Ask the Experts: Q&A at End
- Microgrid Resources Library

## ***How Microgrids Make Money: Opportunities for Transactive Energy***

### **Challenges:**

1. Microgrid CAPEX/OPEX
2. Value Streams
3. System Complexity

### **Why is it Important?**

#### **Smart Building**

Smart Buildings integrated with Microgrids provide advantages to the entire system

#### **Opportunity**

The Smart Building can provide multiple services to both the building owner and microgrid operators

#### **Interoperability**

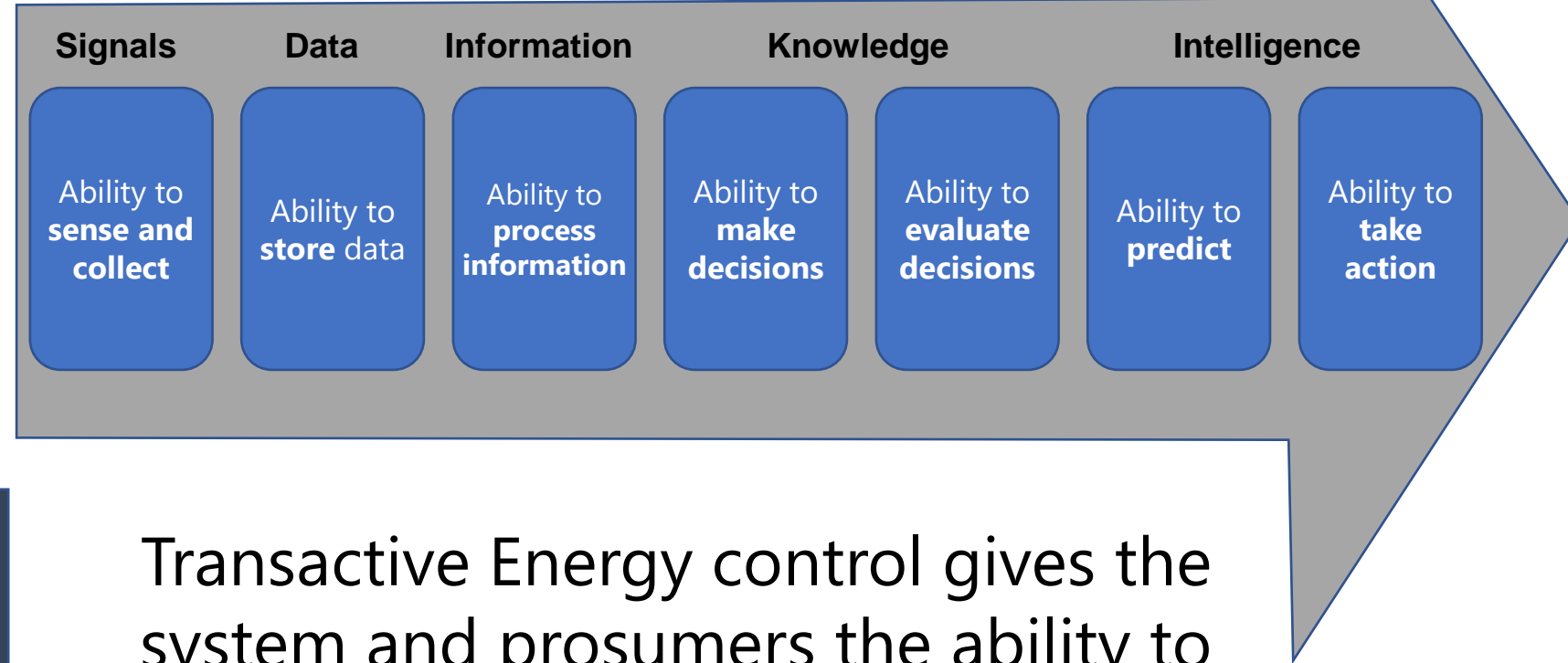
Buildings are becoming smarter and network aware with increased communications and the ability to adapt in real-time

#### **Results**

Smart Buildings driven by Transactive Energy can help the microgrid grid by balancing variable generation, peak load reductions and reduce consumer costs.

## Solution:

1. Integrate Loads
2. Distribute control
3. Share value

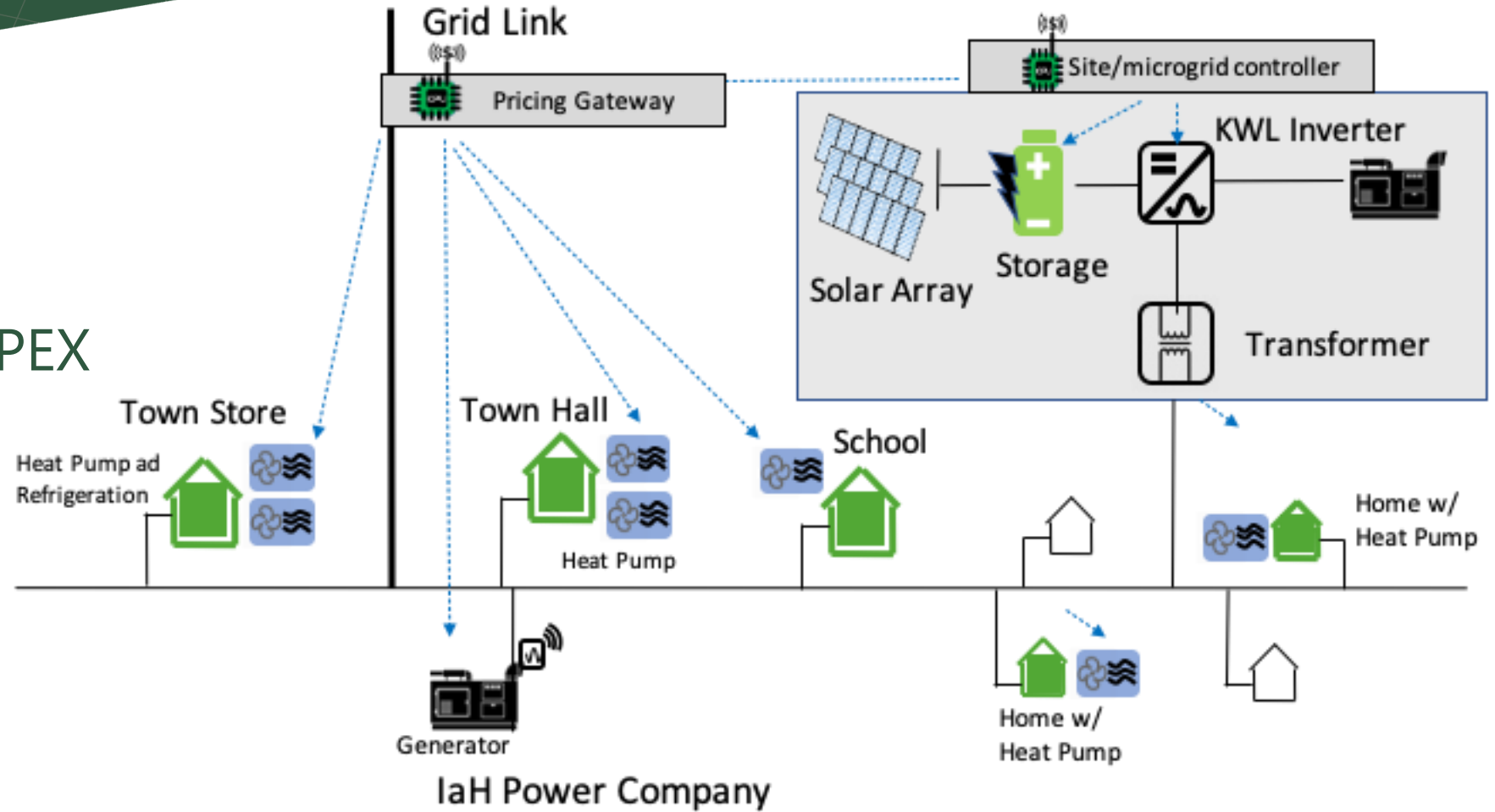


When Power is	Resulting in	
	Consumption	Production
Scarce	↓	↑
Abundant	↑	↓

Transactive Energy control gives the system and prosumers the ability to respond to the scarcity and abundance of power receiving value in the process

## Result:

1. Smaller Storage
2. Lowered CAPEX/OPEX
3. Increased ROI/IRR





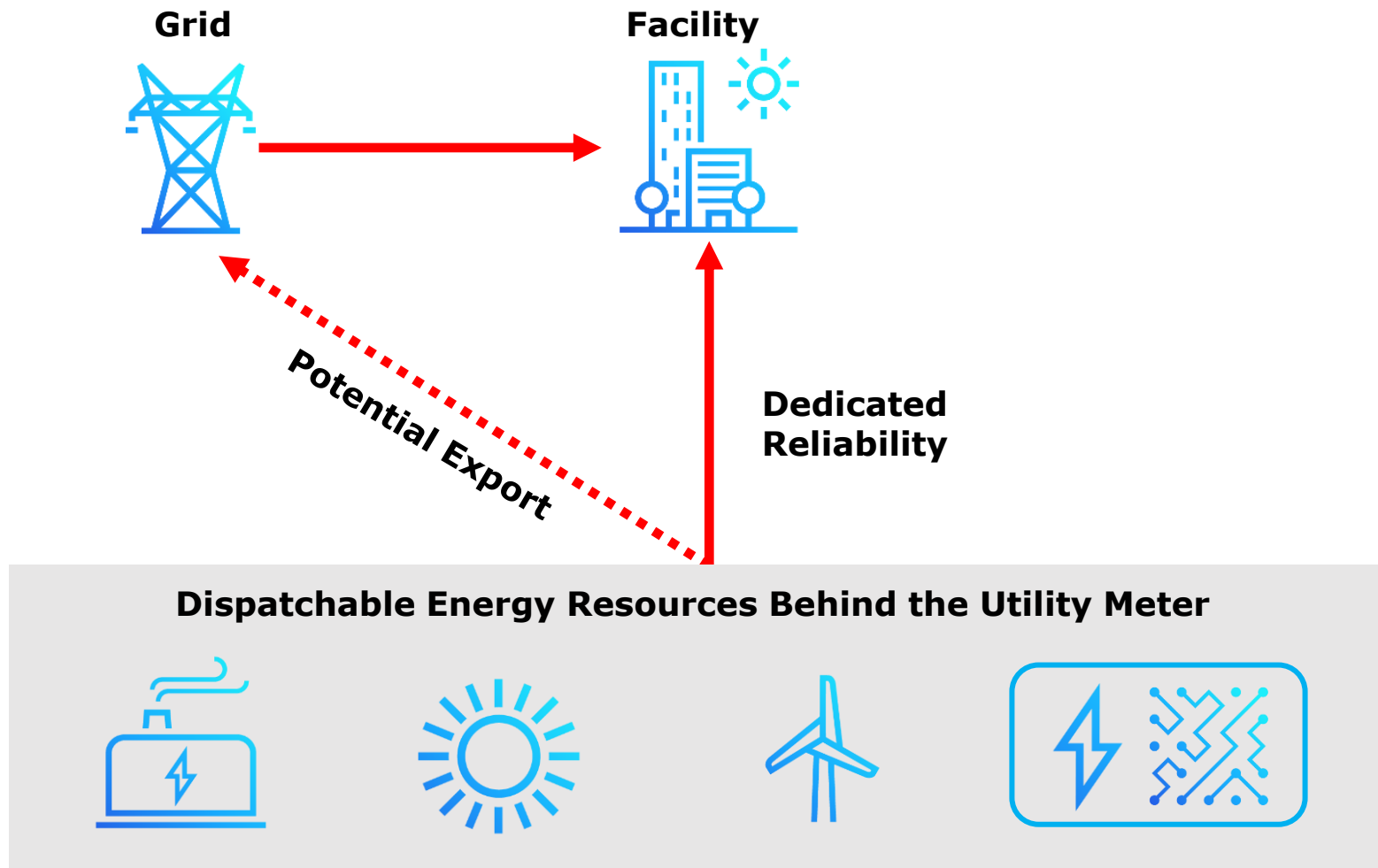
# How Microgrids Make Money

A Tutorial on Ancillary Services, Demand Response, Transactive Energy and other Ways Microgrids Earn Their Keep

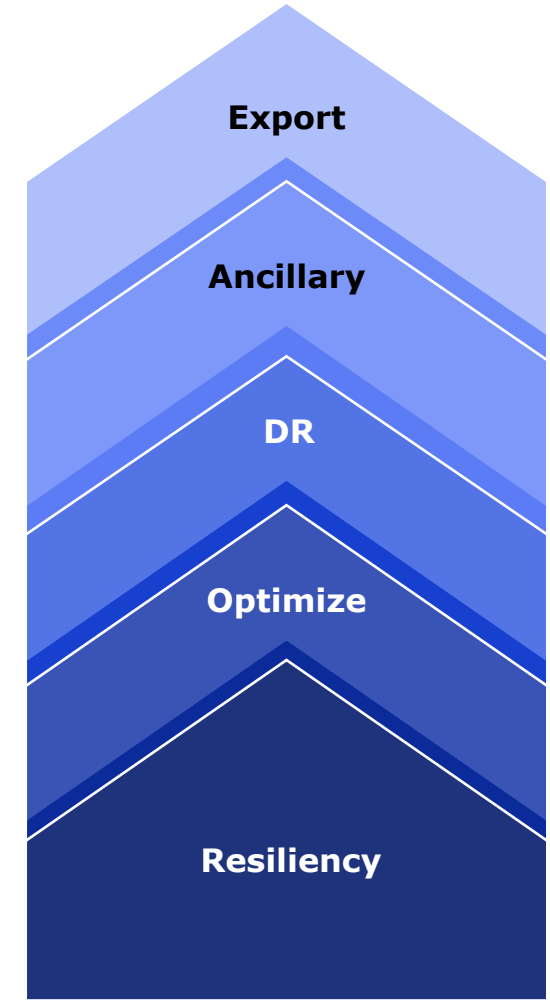
*Doug Sansom  
Director of National Accounts  
and Wholesale Origination*



# Simplified Micro Grid



## Value Stack



# Micro-Grid Value Proposition



## Tangible Value

### Avoided Cost x Probability of Occurrence

#### Optimize Control

- Managing Assets Behind the Meter
- Energy Efficiency
- Time of Use

#### Demand Response

- Local Utility
- State PSC
- ISO/RTO Capacity

#### Ancillary Markets

- Transmission

### Coincident Peaks

- Frequency Response

### Export & Economic Dispatch

- Intangible Value

### Investor/ Owner Confidence

### Sustainability Goals

### Brand Equity

### Ability to Operate at Will



## Cost of Ownership

### Purchase

- Capital Expense
- Lease
- Reliability Service Agreement

### Operations

- Staffing
- Fuel
- Market Signals
- Software
- Optimization Engine

### Maintenance

- Staffing
- Scheduled Services
- Rebuild / Upgrades



# ***Additional Revenue from Grid Services***

*Jacqueline DeRosa, Vice President of Energy Storage, Ameresco*



## **Current Challenges:**

- Rules and Regulations
- Market Design
- Implementation

# Change is Needed...



- **Refine Rules for Behind the Meter**
  - **Participation in Demand Response Markets (Capacity, Energy, Ancillary Services)**
- **Create NEW Rules for In-Front-of-Meter Microgrid**
  - **Wholesale services during “blue sky” operation**
  - **And, Island during bulk grid shutdown**
  - **Defining responsibilities, standards, requirements**
    - **protection synchronization, power quality, black start capability, metering, etc.**
- **Ensure Market Design can accommodate Energy Storage**

# Moving in the Right Direction



- **Advocate for Best Practices to Create a More Uniform Strategy**
- **Create more streamlined and up-to-date rules**
  - **Boundaries**
  - **Interconnection**
  - **Safety**
  - **Standby Charges**
  - **Valuing the Microgrid .**
  - **Services for the Larger Grid**





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# Ask the Experts: Q&A Session

Type your questions in to the Q&A box

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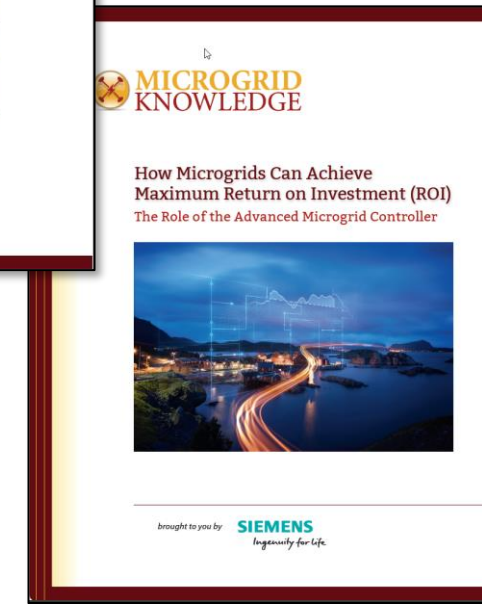
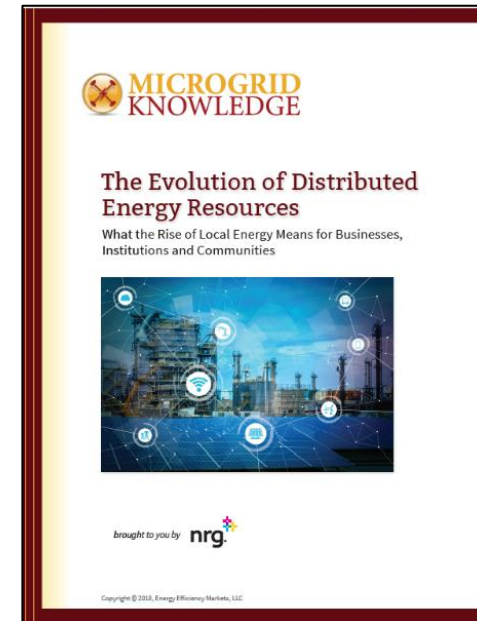
# Microgrid Knowledge Virtual Conference Resource Library

## Recommended Resources

### Microgrid Resource Library

- Visit [ThinkMicrogrid.com](http://ThinkMicrogrid.com)

Network with the MGK  
Community on LinkedIn





# Microgrid 2020 LIVE Conference – Nov. 18-20

Philadelphia, PA

**In-Person Session:** *Think and Grow Resilient: How Smart Microgrids Help Businesses Improve the Bottom Line*

- Plus 90 speakers in 30+ sessions on best practices
- 35 exhibitors
- Networking opportunities





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# Thank You!

*Next Session: How to Finance a Microgrid Project in a Post Covid-19 Economy @ 12 Noon Eastern*

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