



Transactive Energy

A Sustainable Business and Regulatory Model for Electricity



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The Transactive Energy business model.

Forward transactions are used to coordinate investments and manage risk.

Spot transactions are used to coordinate operating decisions.

All parties act autonomously.

There are two products: energy and transport.

The Transactive Energy process is straightforward. There are tenders and transactions. There are two kinds: “forward” and “spot.”



Buy Tenders:
Forward and Spot



Sell Tenders:
Forward and Spot



Transactions:
Forward
and Spot

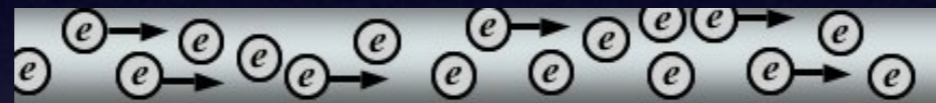


DELIVERY

There are two products: electric energy and transport.



Electric energy
(produced at a
place and time)



Transport



Electric energy
(delivered at a
different place
and same time)

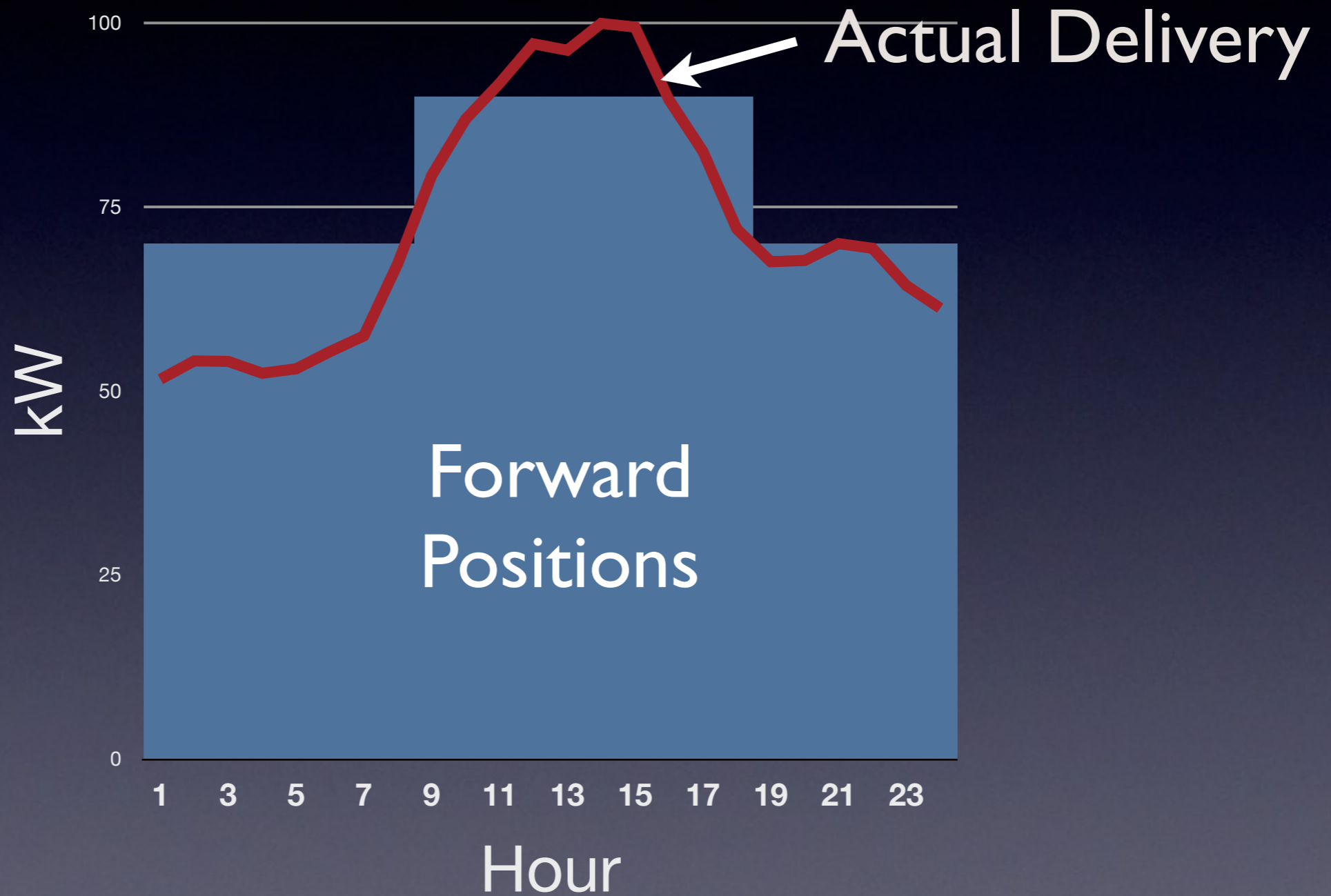
Here's an example of how Transactive Energy works for a consumer.



- Based on my typical usage, I automatically transact with a supplier for delivery of a fixed quantity of energy in each hour of the year(s) for a fixed monthly payment (subscription.)
- If I use less than I subscribed for in each hour then I am paid for the difference at the hourly spot price.
- If I use more than I subscribed for then I pay for the difference at the hourly spot price.
- At any time I can automatically buy or sell a quantity of energy at current tendered prices.

My energy management system (EMS) automates this process for both energy and transport.

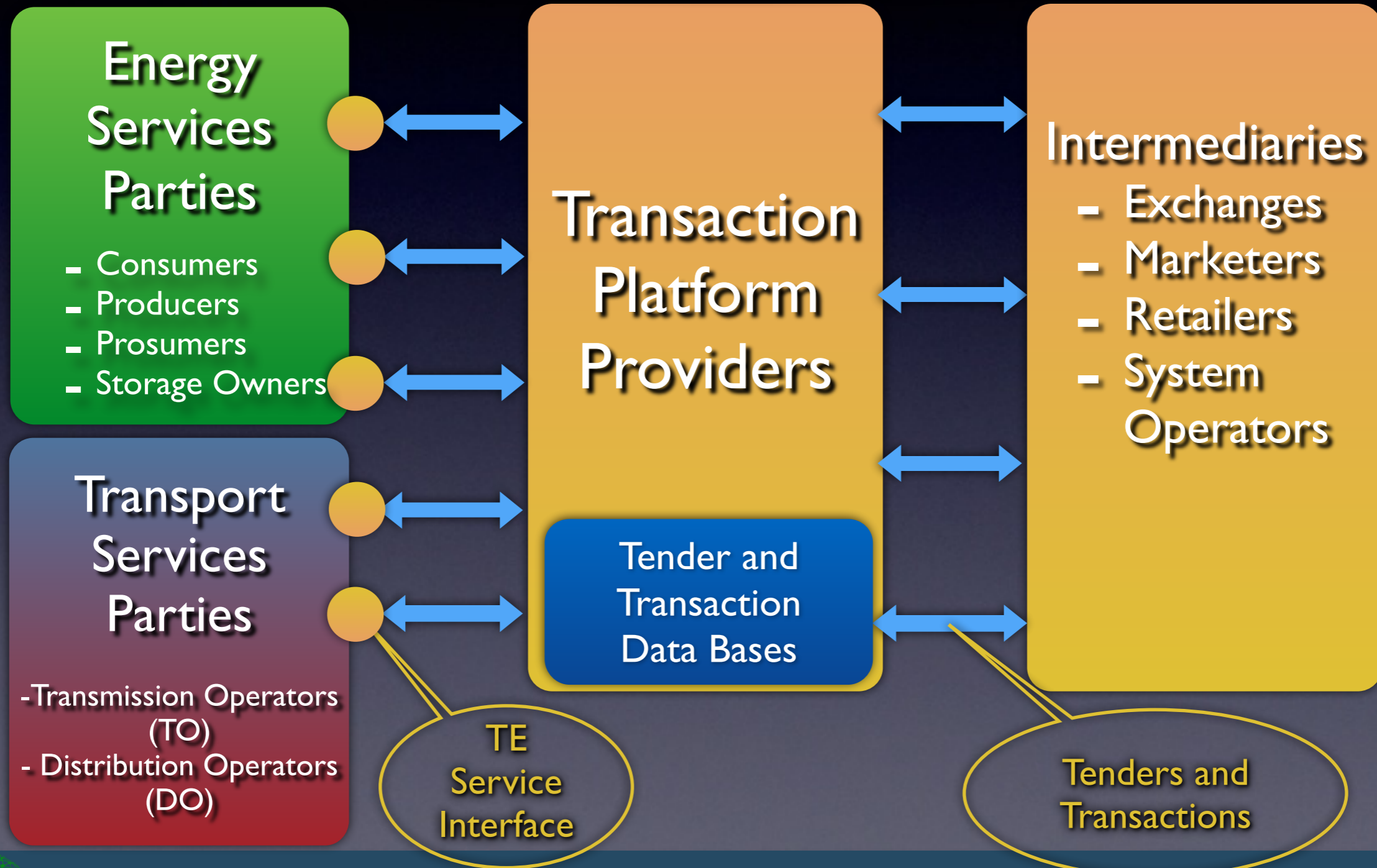
Spot market transactions are used to buy or sell the difference between forward positions and actual demand.



Overseen by Grid Custodians, Parties Interact on TE Platforms.

Grid Custodians:

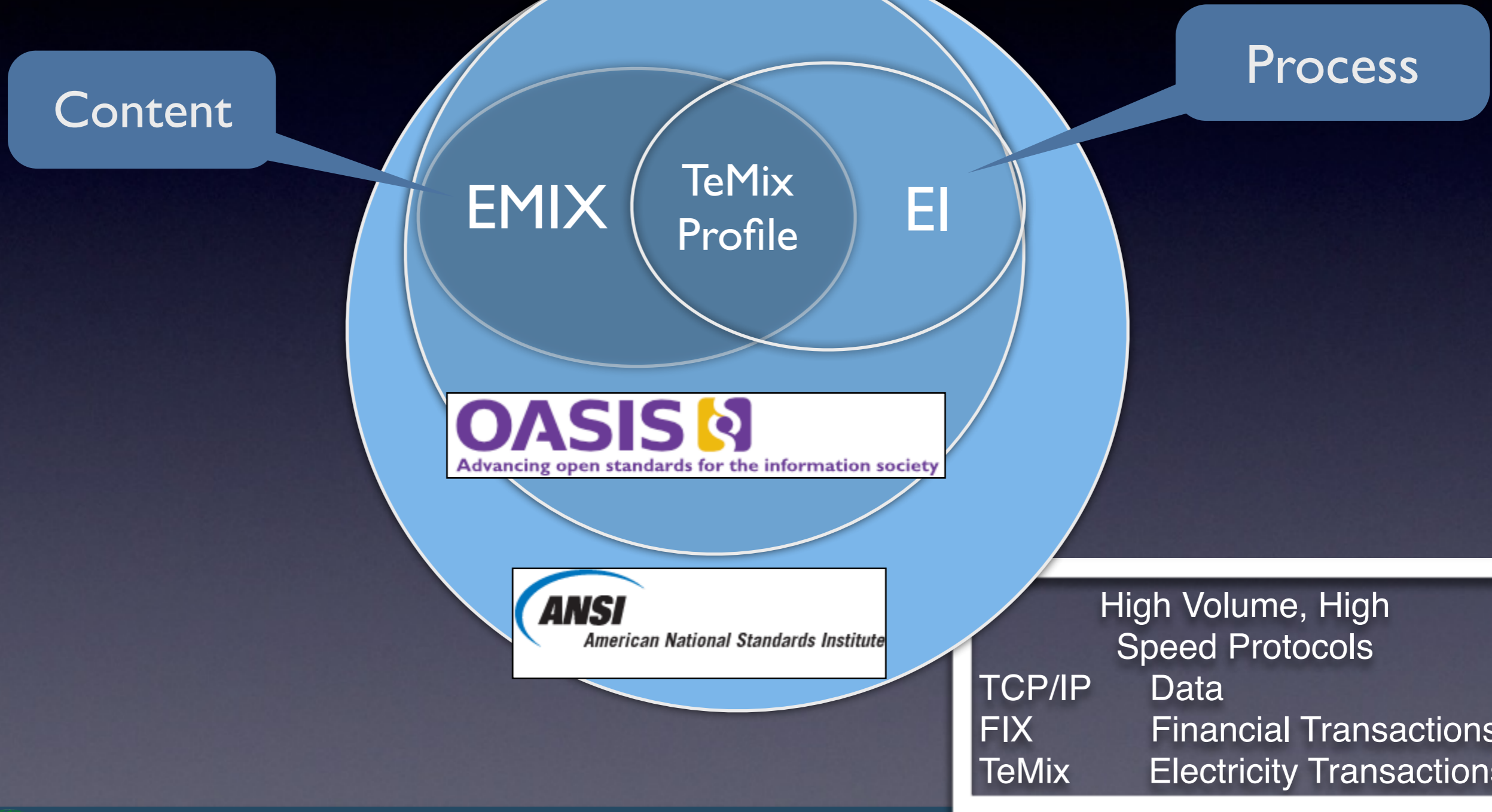
Congress, DOE, EPA, FERC, NERC, Legislatures, PUCs, Munis, CCAs, PMAs, Coops



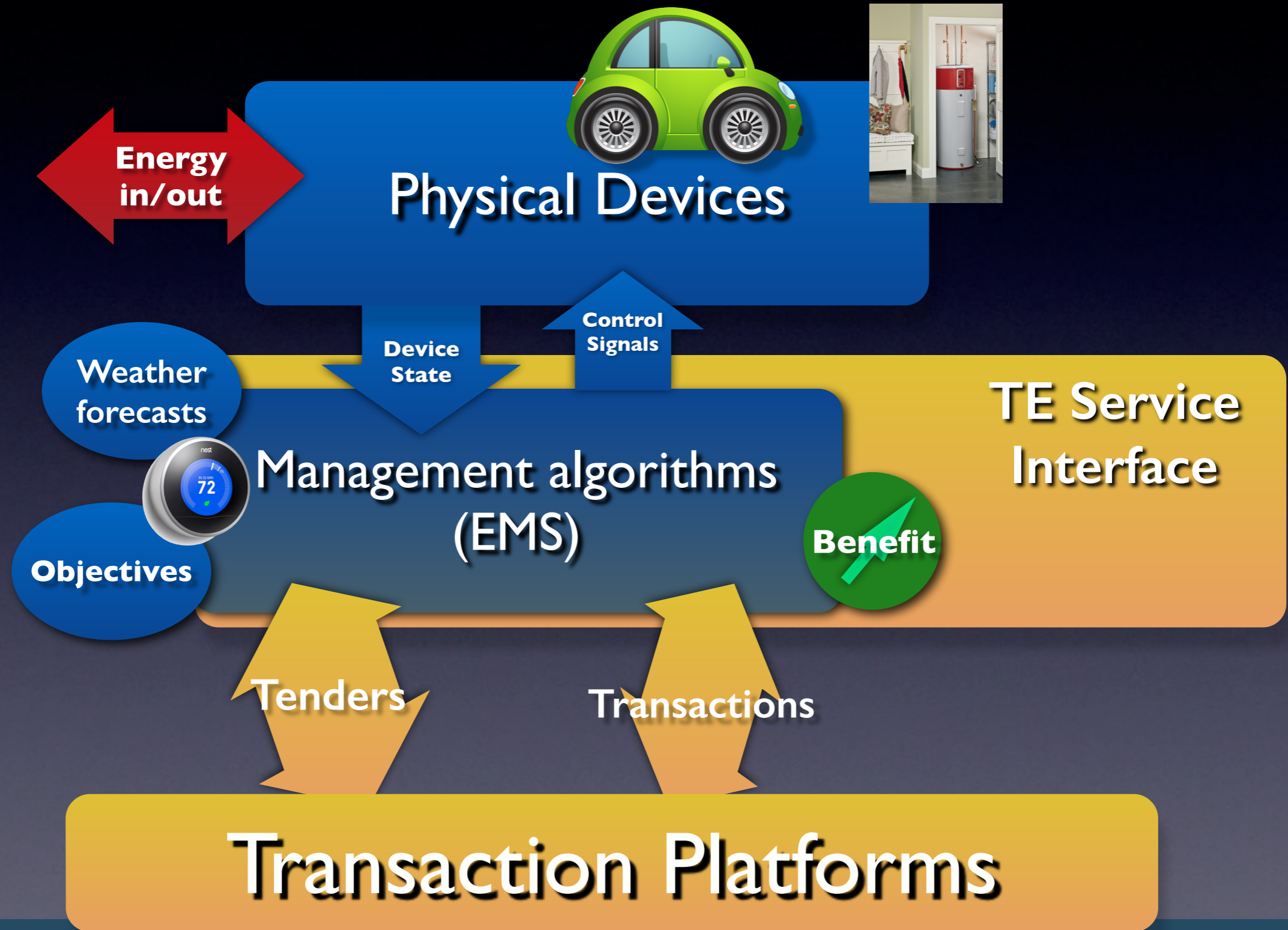
The “open and free” TeMix protocol covers the required process and content.



Catalog of Standards



Each party in the Transactive Energy network has a TE Service Interface that communicates between management algorithms, physical devices, and the transaction platforms.

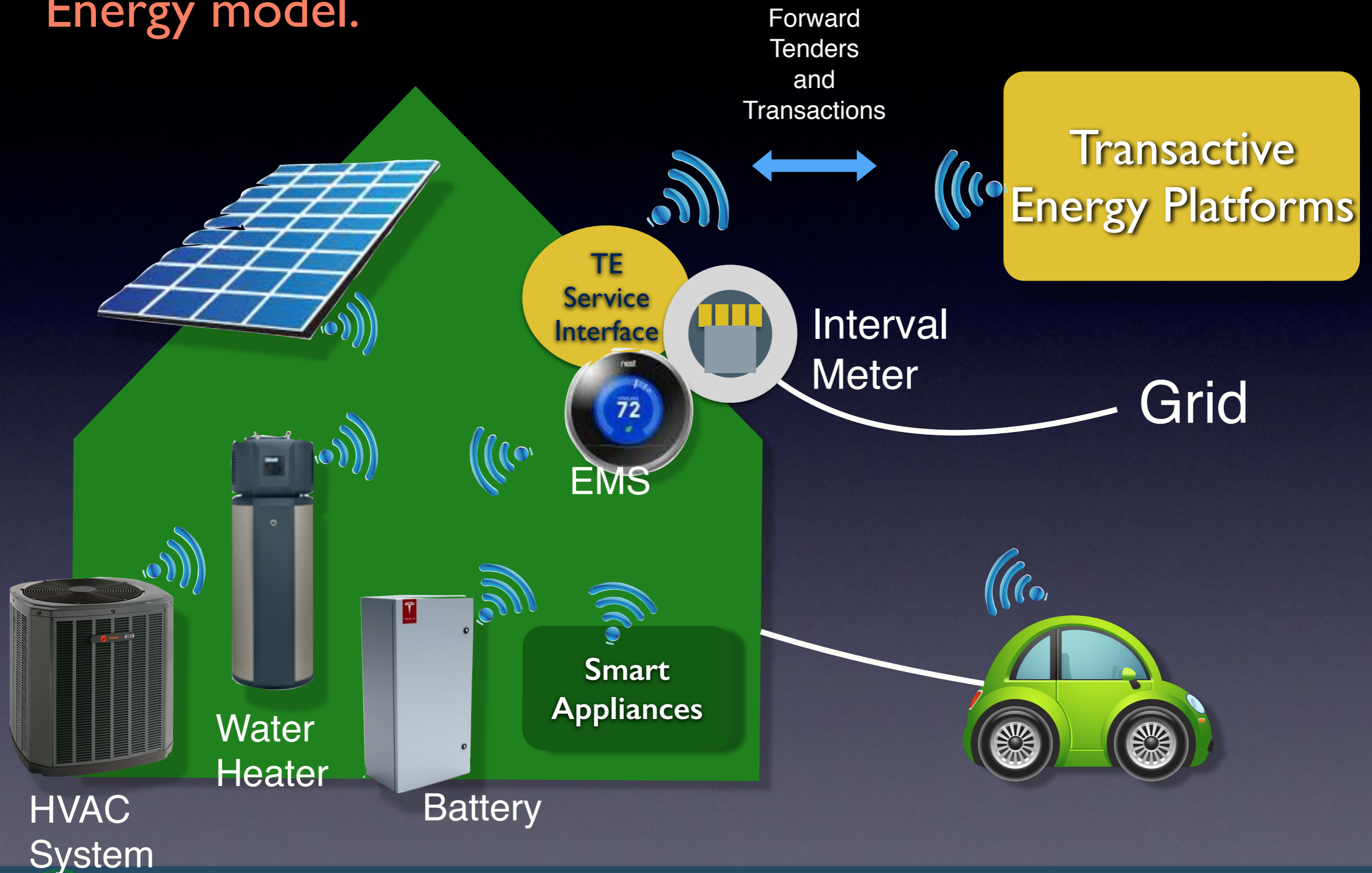


We have all the connections we need. Home, office, mobile. People, devices, data.



You can buy a thermostat at the Apple Store that is remotely programable with your iPhone. The thermostat knows where you are, how you behave when you are at home, and what the weather forecast is.

A fully-equipped home looks like this in the Transactive Energy model.



Transactive Energy can be incrementally deployed to work with current systems and entities.



Transactive Energy is a “Silver Bullet.”

- It will spur innovation.
- It is fair and transparent.
- It will provide incentives for efficiency.
- It addresses many current vexing problems:
 - renewables integration,
 - net metering,
 - investment, reliability and fixed cost recovery,
 - dynamic pricing and price responsive demand,
 - decentralized generation, storage and microgrid integration,
 - wholesale/retail market coordination, and
 - regulatory models.





State Legislatures, Public Utilities Commissions, and municipal and coop boards can do the following to enable Retail Transactive Energy:

- Encourage Transactive Retail Energy pilot projects and monitor results.
- Transition existing retail tariffs to “Transactive Retail Tariffs” with forward and spot transactions.
- Deploy transaction platforms to facilitate buying and selling by retail customers, prosumers and DERs of energy and cost-of-service transport.

What role can and should SGIP play in standards and pilots for Transactive Retail Tariffs?

For more information on Transactive Energy
go to :



TEA TM

TRANSACTIVE ENERGY ASSOCIATION

www.tea-web.org

The Transactive Energy concepts are developed further in a forthcoming eBook.

