

Privacy

in the

Vision and Strategy
for Europe's Electricity
Networks

Smart Grid


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Where we are going . . .

- **The Smart Grid**
- **Privacy legal issues**
- **Privacy Strategies**

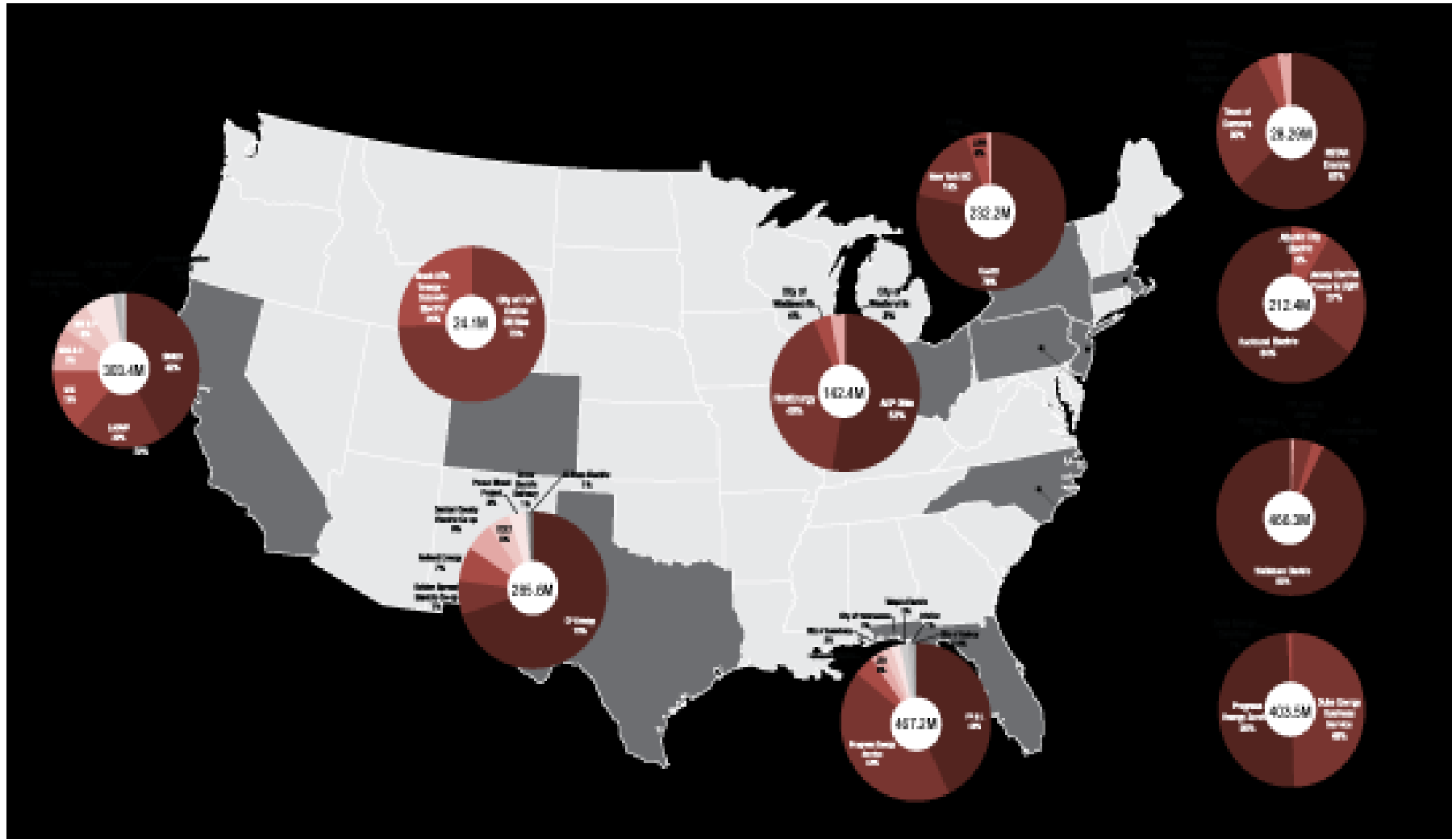


The Smart Grid

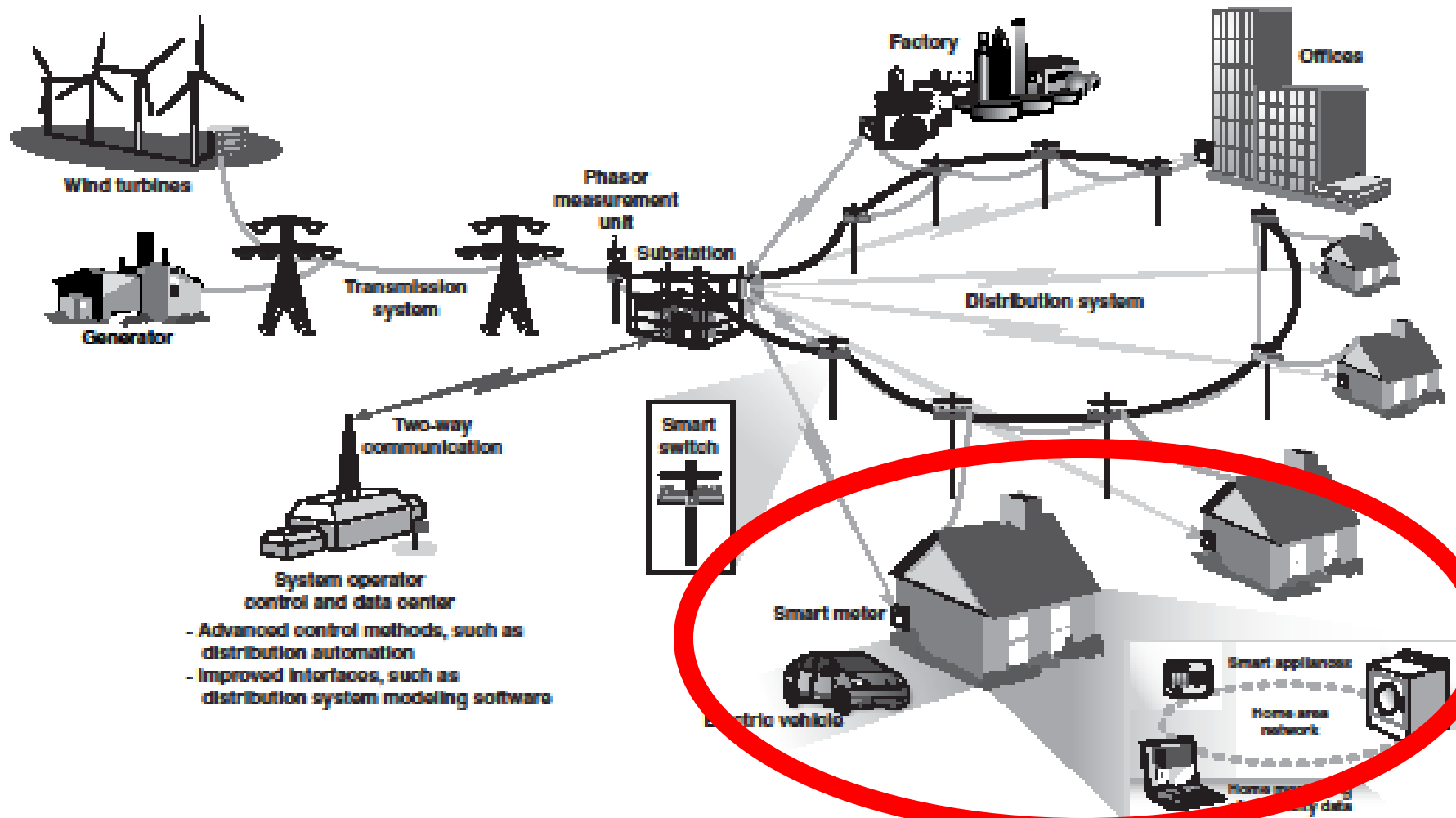
- Promise of the Smart Grid (Tendril Inc.) 
- From a legal perspective,
the Smart Grid Combines
 - **Data network** (collection and analysis)
 - **Telecommunications network** (multi directional)
 - **Utility** (Power generation, transmission and distribution)

American Recovery and Reinvestment Act of 2009

\$4.5 BILLION

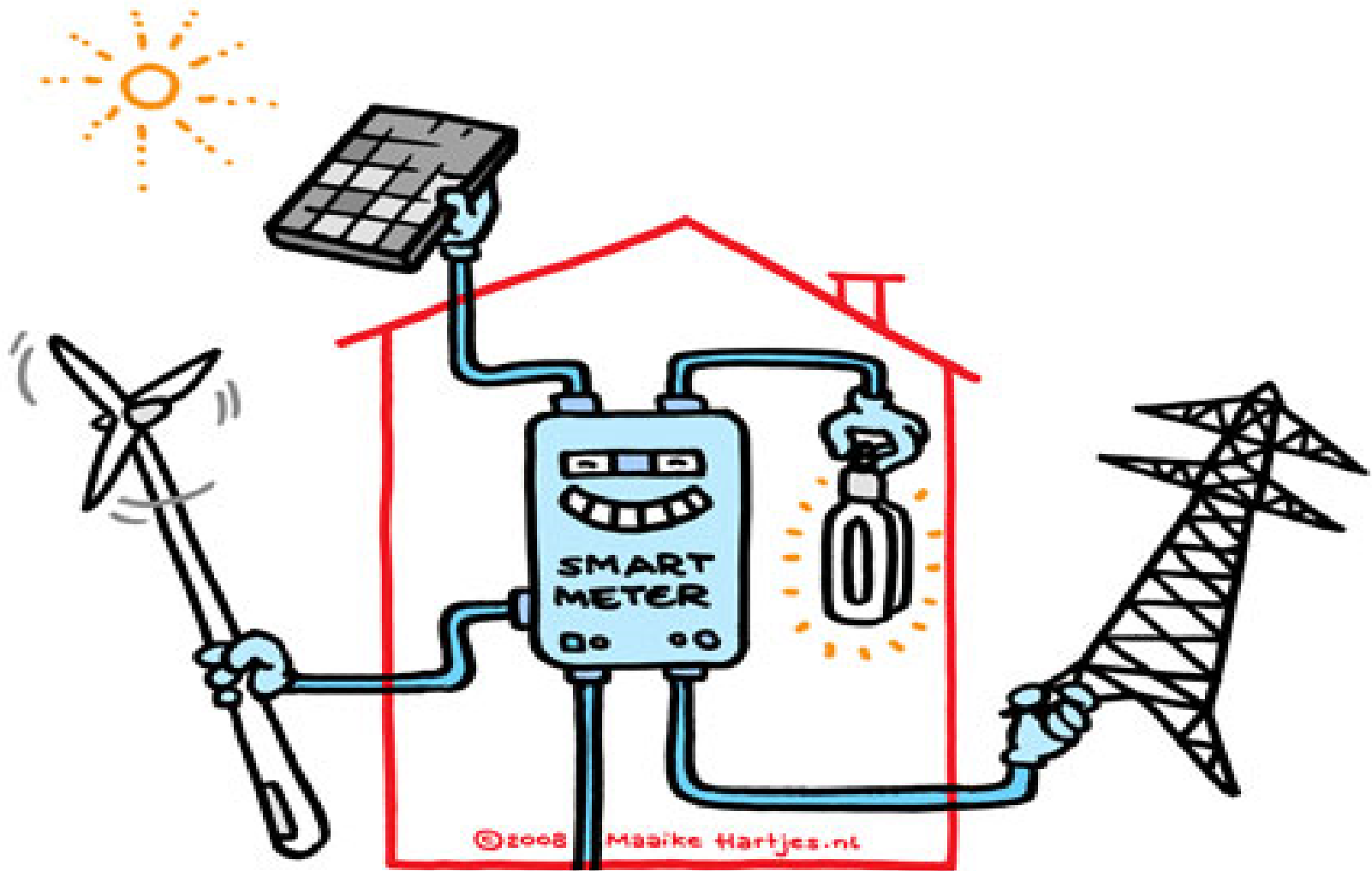


Smart Grid as a Data Network

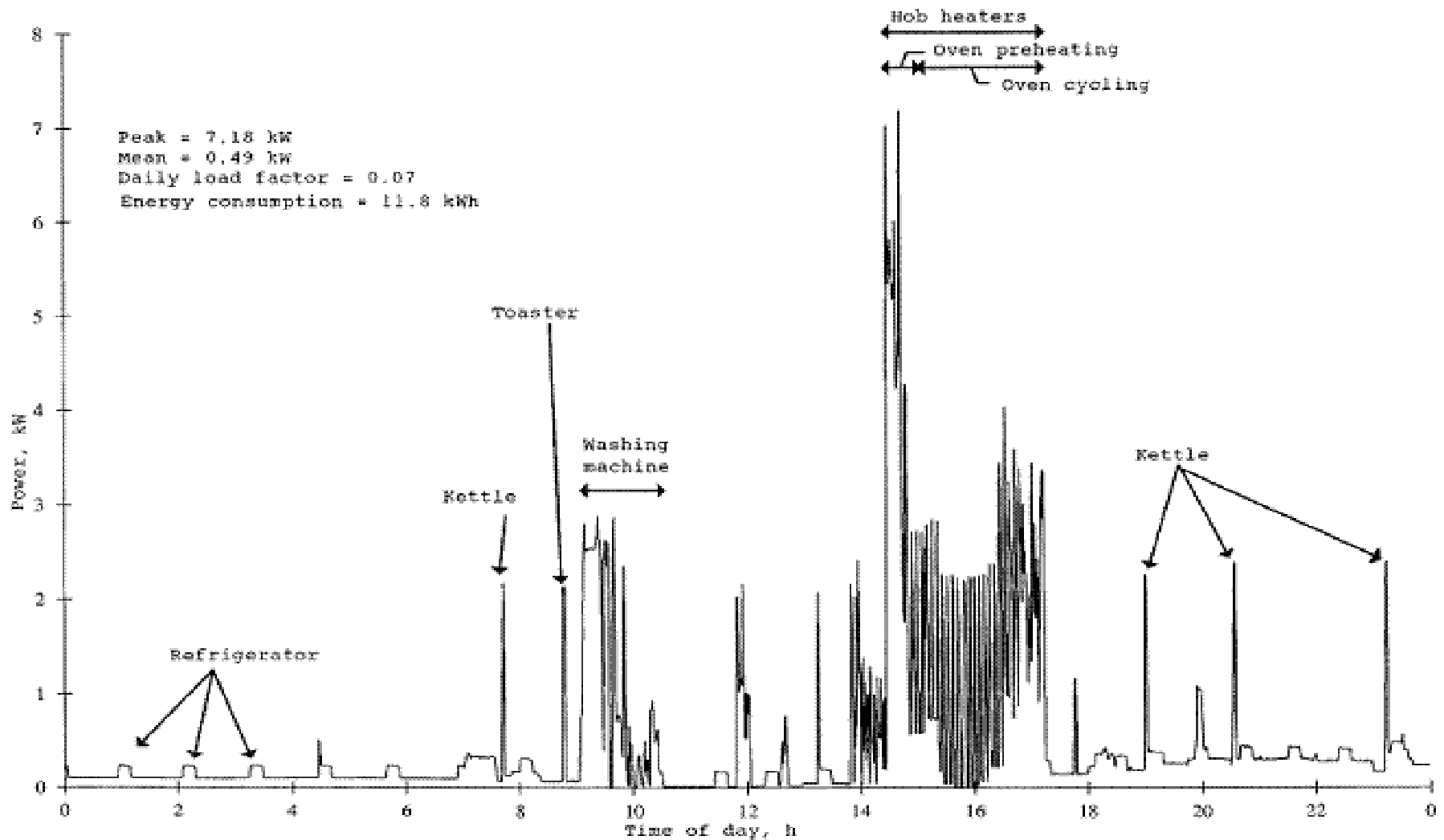


Smart Meters

aka “Advanced Metering Infrastructure”



Patterns of Appliance Use

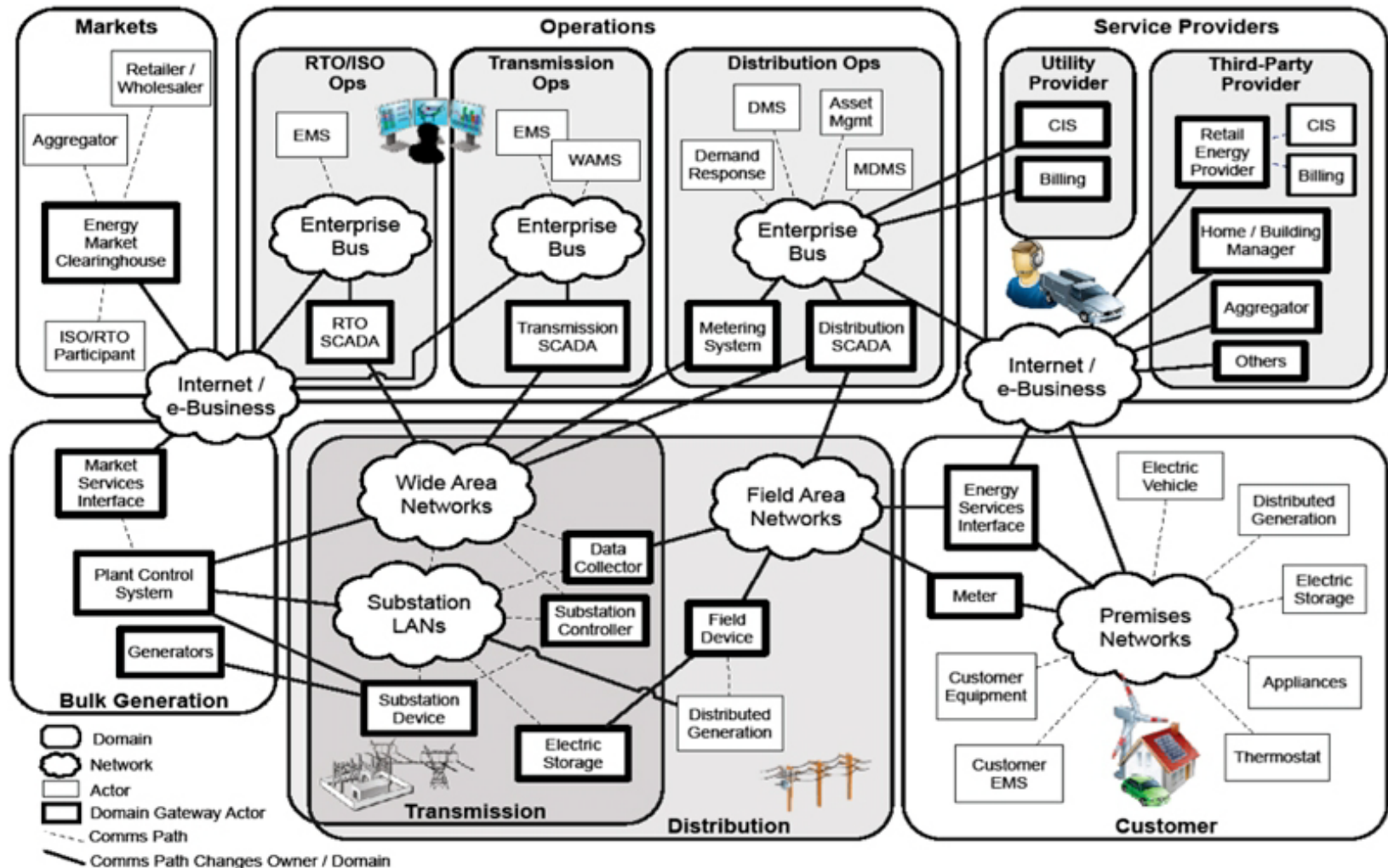


Information Available through the Smart Grid

Information potentially available through the Smart Grid

Data Element(s)	Description
Name	Party responsible for the account
Address	Location where service is being taken
Account Number	Unique identifier for the account
Meter reading	kWh energy consumption recorded at 15–60 (or shorter) minute intervals during the current billing cycle
Current bill	Current amount due on the account
Billing history	Past meter reads and bills, including history of late payments/failure to pay, if any
Home area network	Networked in-home electrical appliances and devices
Lifestyle	When the home is occupied and unoccupied, when occupants are awake and asleep, how much various appliances are used
Distributed resources	The presence of on-site generation and/or storage devices, operational status, net supply to or consumption from the grid, usage patterns
Meter IP	The Internet Protocol address for the meter, if applicable
Service provider	Identity of the party supplying this account (relevant only in retail access markets)

A Network of Networks



Smart Grid as a Data Network

Federal

- **NIST** in the Department of Commerce
 - Guidelines
 - **Federal Information Security Management Act of 2002**
(Security includes confidentiality,
as well as integrity and availability)
- **FERC** in the Department of Energy

State

- Smart Grid Legislation in a few states
- Public Utilities Commissions

Smart Grid as a Telecommunications Network

- **Federal**

- Constitution – Fourth Amendment
- Electronic Communications Privacy Act
- Computer Fraud and Abuse Act
- Federal Trade Commission Act
- Federal Communications Commission
Broadband over Powerline Regulations

- **State**

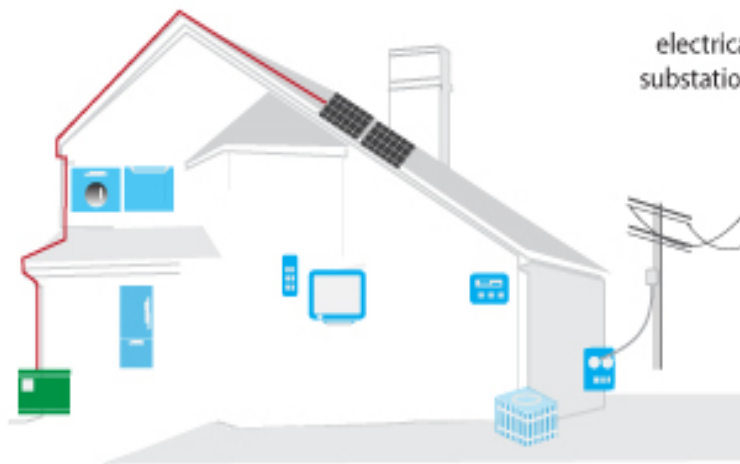
- Constitutions – Privacy Guarantees
- Deceptive Practices Acts

AT&T View

Before: Today's grid

One-way exchange of energy, information
(monthly phone bill)

One rate at all times

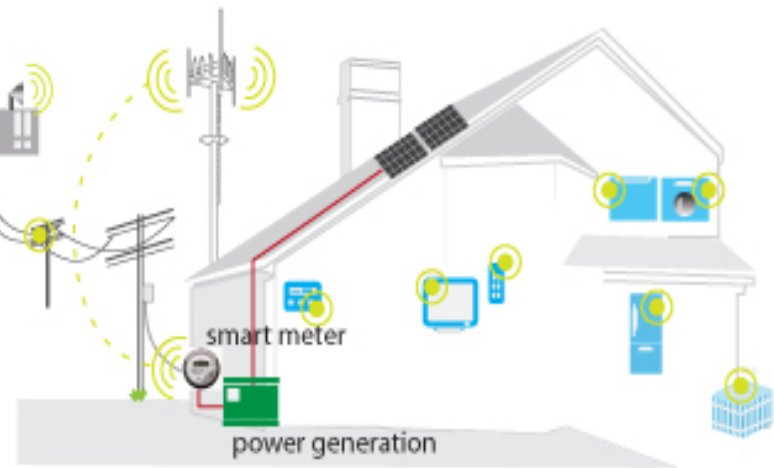


After: Smart grid

Two-way exchange of energy, information

Variable-pricing (cheaper at non-peak times)

Smart meter turns backward for sending
power from home to grid



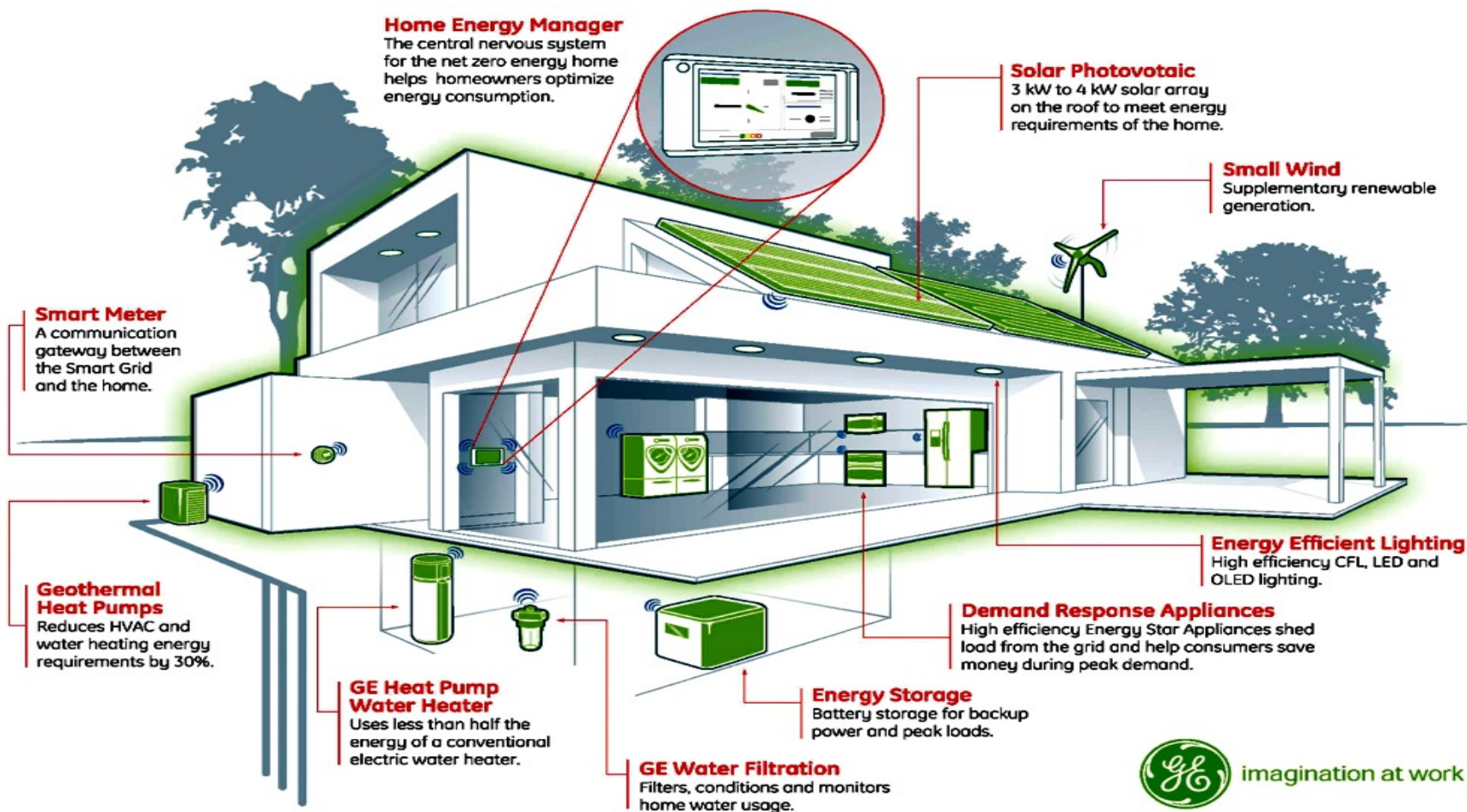
Smart Grid as a Utility

- **Electricity**
- **Gas & Electricity**
- **Some states do not regulate power generation and distribution at all**
 - CoOps and Public Power

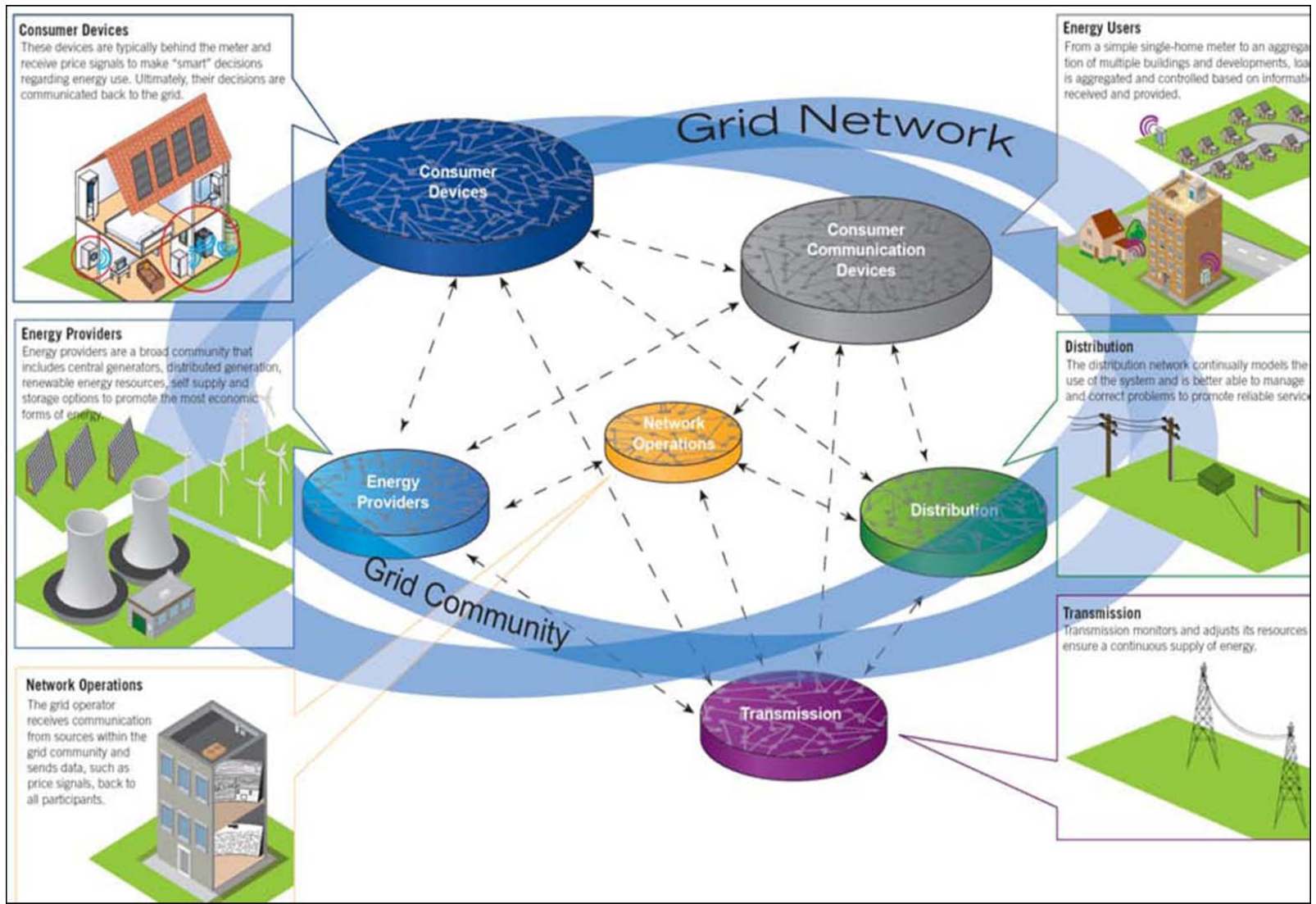
Smart Grid as Economic and Environmental Protection

Energy Efficiency and Demand Management

GE Targets Net Zero Energy Homes by 2015



Balancing Supply and Demand for Electricity



Privacy's Place in the Smart Grid

Central to user Trust

- **Concerns about control over home life**
 - Taking over appliances, shutting down AC
 - Autonomy
- **Concerns about surveillance of the home**
- **Concerns about personal information related to electricity use**
 - Identity theft
 - Stalking
 - Marketing

What to do about privacy in the Smart Grid

- **Cybersecurity**
 - FERC guidelines
- **Fair information Practices**
- **Privacy by Design**

Fair Information Practices

FIPs Principles

Adopted by the California Public Utilities Commission

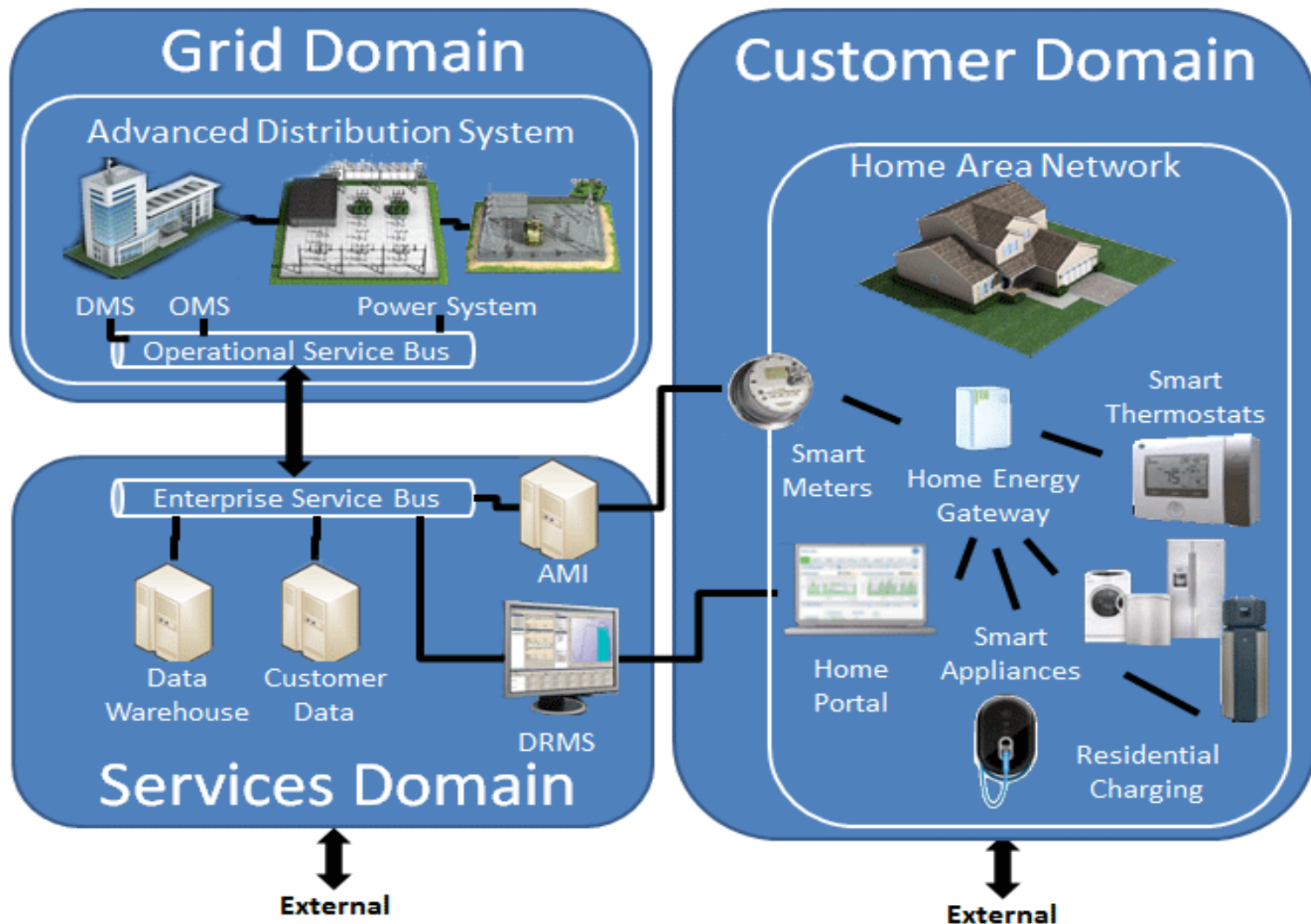
July 14, 2011

(Derived from the Department of Homeland Security)

- 1. Transparency (Notice)**
- 2. Purpose Specification**
- 3. Individual Participation (Access and Control)**
- 4. Data Minimization**
- 5. Use and Disclosure Limitation**
- 6. Data Quality and Integrity**
- 7. Data Security**
- 8. Accountability and Auditing**

Privacy by Design

3 Smart Grid Domains



The background of the slide features a warm, orange-to-red gradient. Overlaid on this gradient are several stylized, semi-transparent images of electrical transmission towers and wind turbines, creating a sense of a smart grid or energy infrastructure.

**Thank you
for joining me
in thinking about
the Place of Privacy
in the Smart Grid !**

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