

# **SmartGridCity™:**

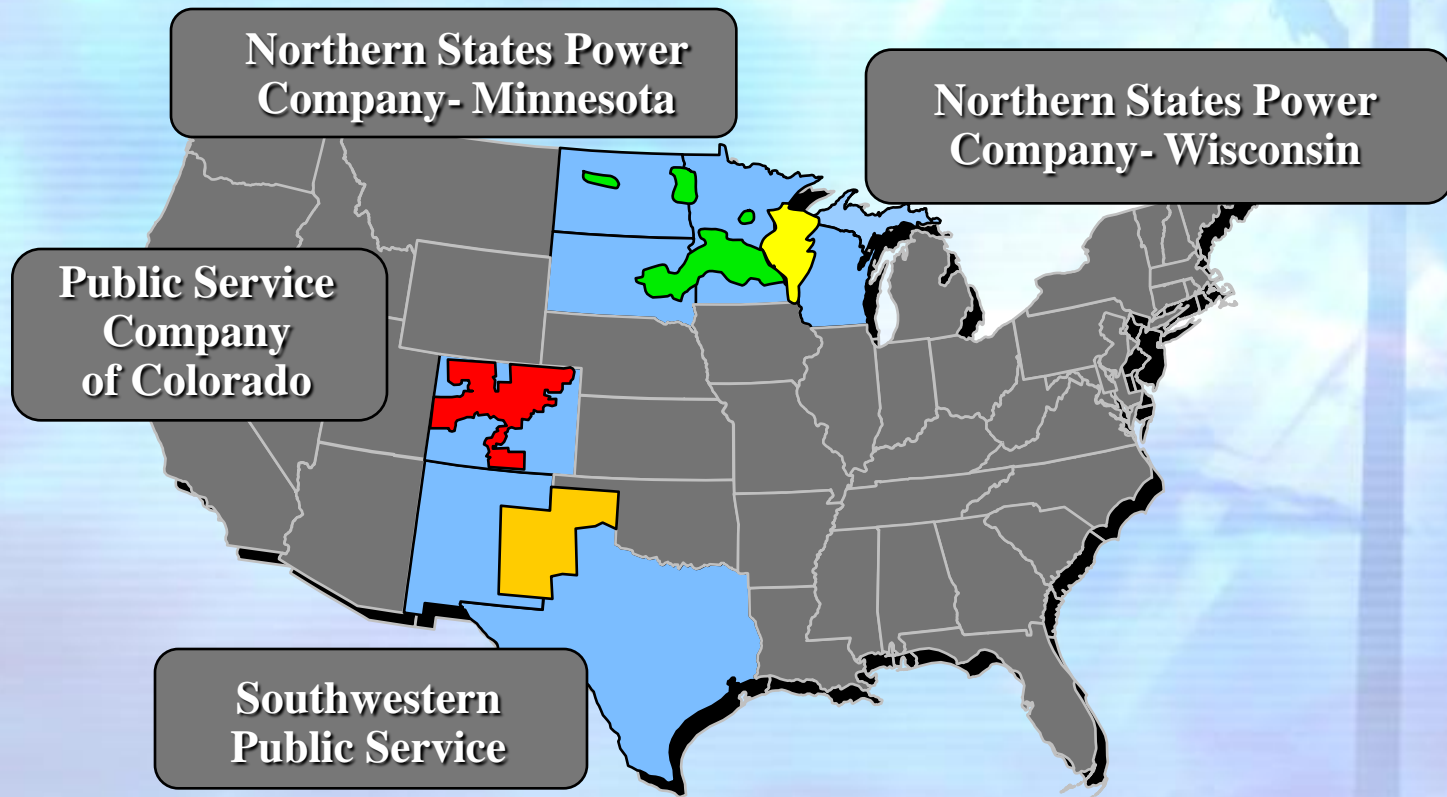
*A blueprint for a connected,  
intelligent grid community*

**Presented to the Utah Public Service Commission  
May 13, 2009**



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# Xcel Energy



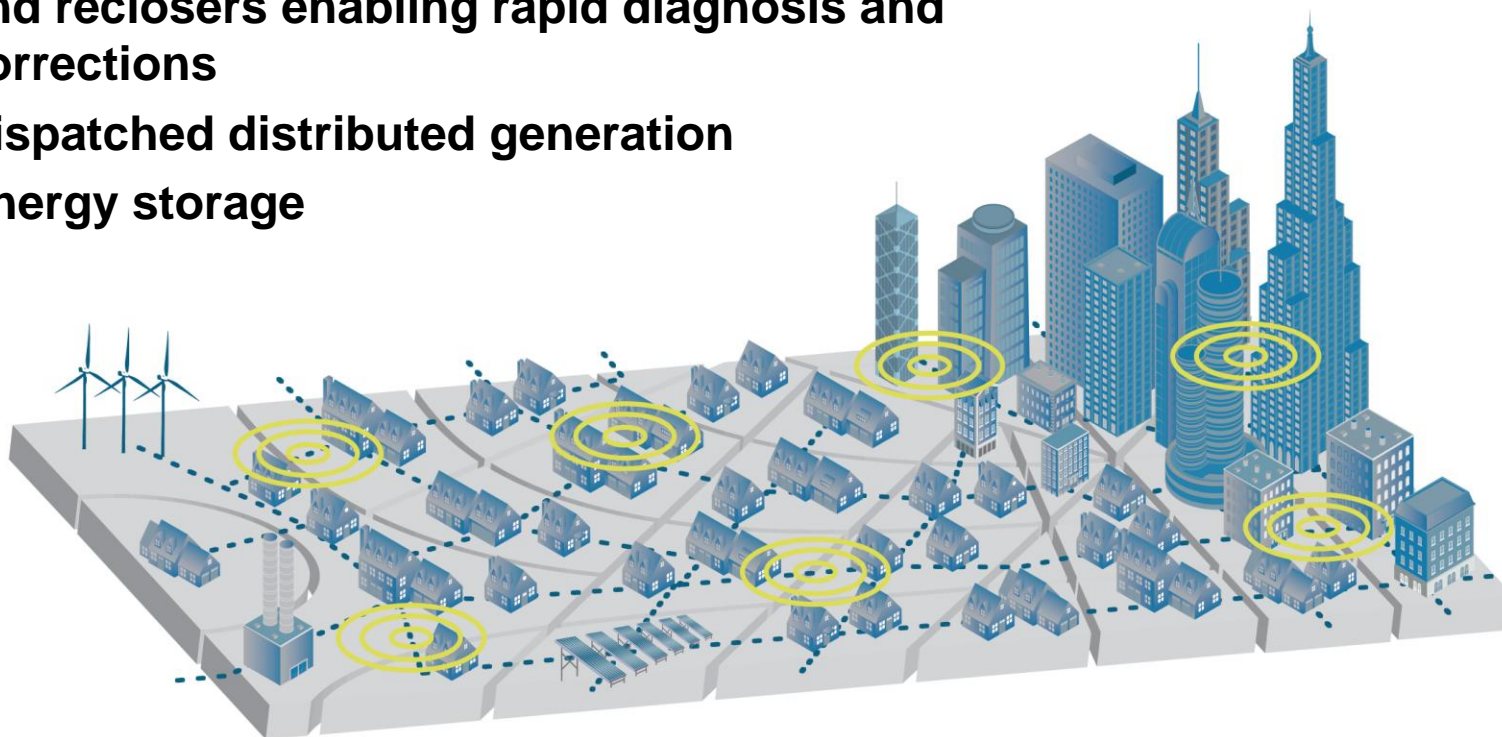
# **Smart Grid: A Digital, Information-Age Grid**

- **Basic structure**
  - Similar to today's grid
  - Applies information technology available today
  - Much more information and control
- **Power of information**
  - More precise system design and operation
  - Improved reliability
  - Ability to meet customer needs and wants
  - More products and services
  - Reduced emissions and environmental impact

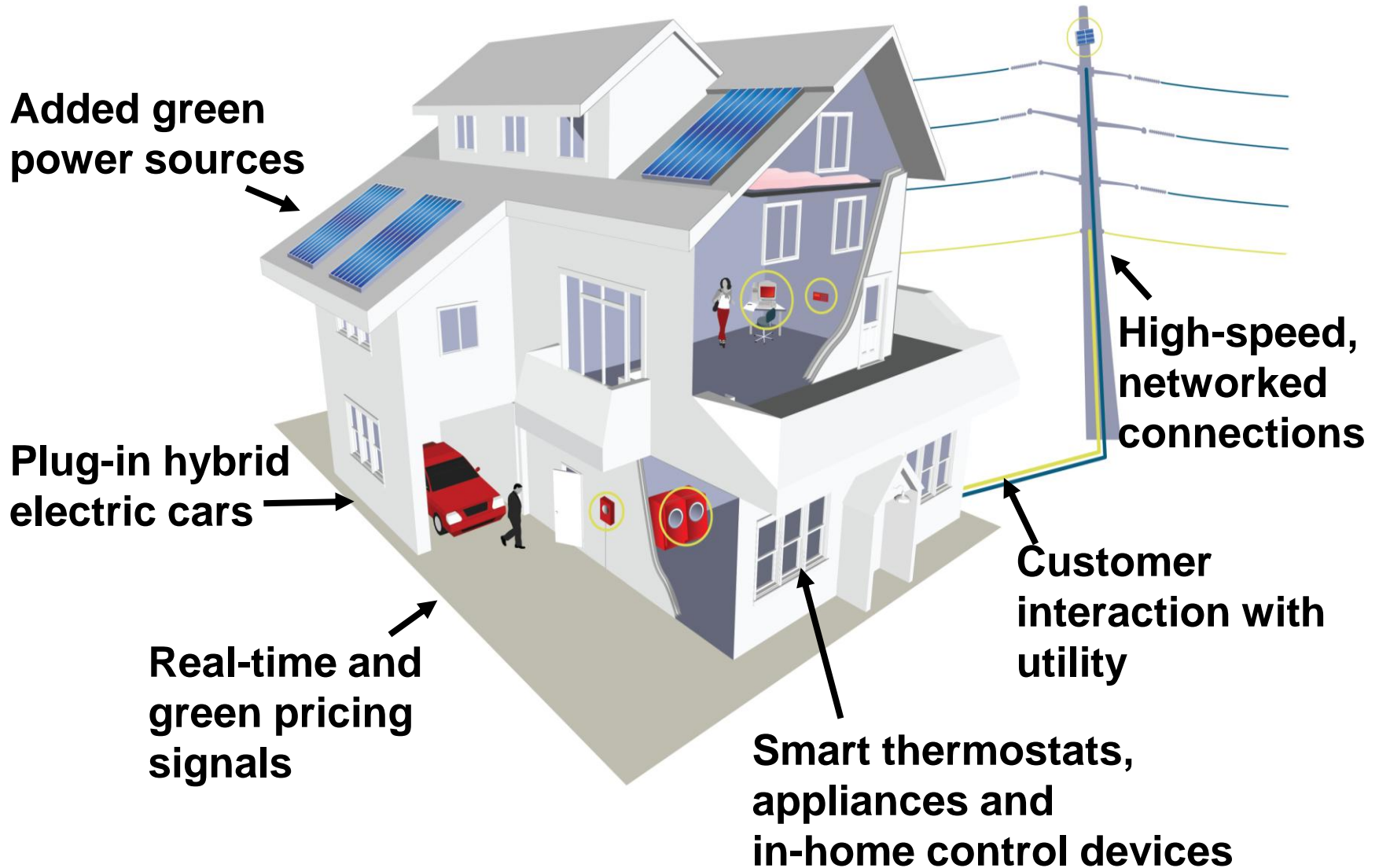


# An Integrated Energy System

- Incorporates entire energy pathway, from generation to customer
- High-speed, near real-time, two-way communications
- Sensors at substations, transformers, circuit breakers and reclosers enabling rapid diagnosis and corrections
- Dispatched distributed generation
- Energy storage



# The Smart Home



# SmartGridCity: The Vision

- **Create a catalytic event: Test much more than smart meters.**
- **Leverage public and private sector partnerships/research and development.**
- **Don't choose a technology winner in advance. Deploy multiple technologies, rate structures, in-home devices, etc.**
- **Test multiple benefit hypotheses ... don't predetermine outcomes.**
- **Establish an on-going testing and validation environment that will serve as a continuous Smart Grid innovation center.**



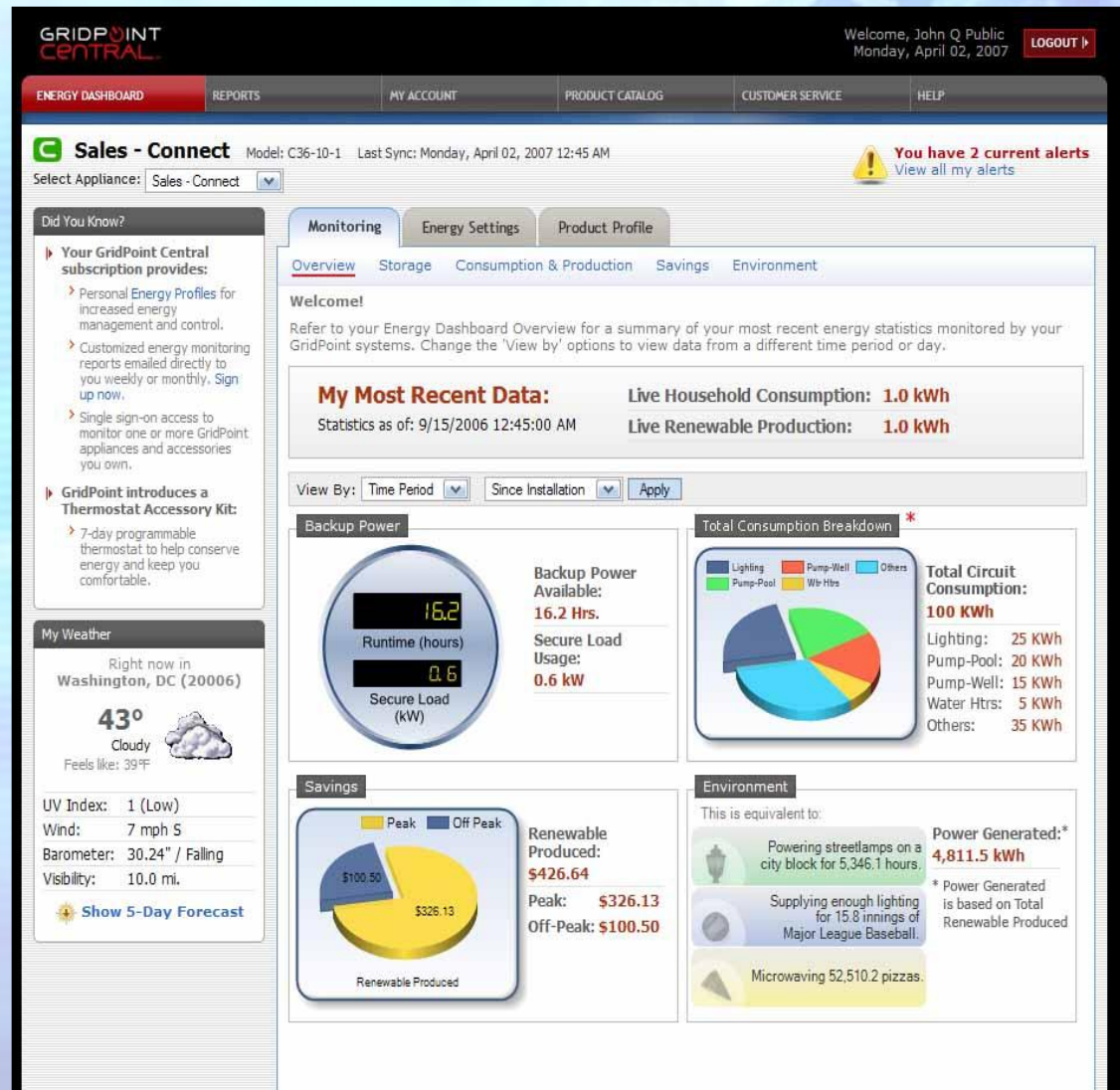


# **SmartGridCity: Project Status**

- **Groundbreaking in April 2008**
- **Seven key “investing” partners**
- **Scope: City of Boulder -- 45,000 accounts (38,000 residential)**
- **Substation, Distribution & Communication system: Nearly complete**
- **More than 100 miles of fiber installed**
- **About 15,000 of 25,000 two-way meters installed**
- **Monitoring 3,200 transformers and 5,200 network elements**
- **Automated systems now in field use**
- **In process of installing 300 commercial and industrial meters**
- **Web portal and in-home devices offered to customers in Q2 2009**
- **Benchmarking throughout 2009**
- **New pilot pricing tariffs being developed, offered in Q1 2010**

# Smart Grid Web Portal

- Allows customer to monitor and manage their energy use
- Online tools provide more options, choice and personal control

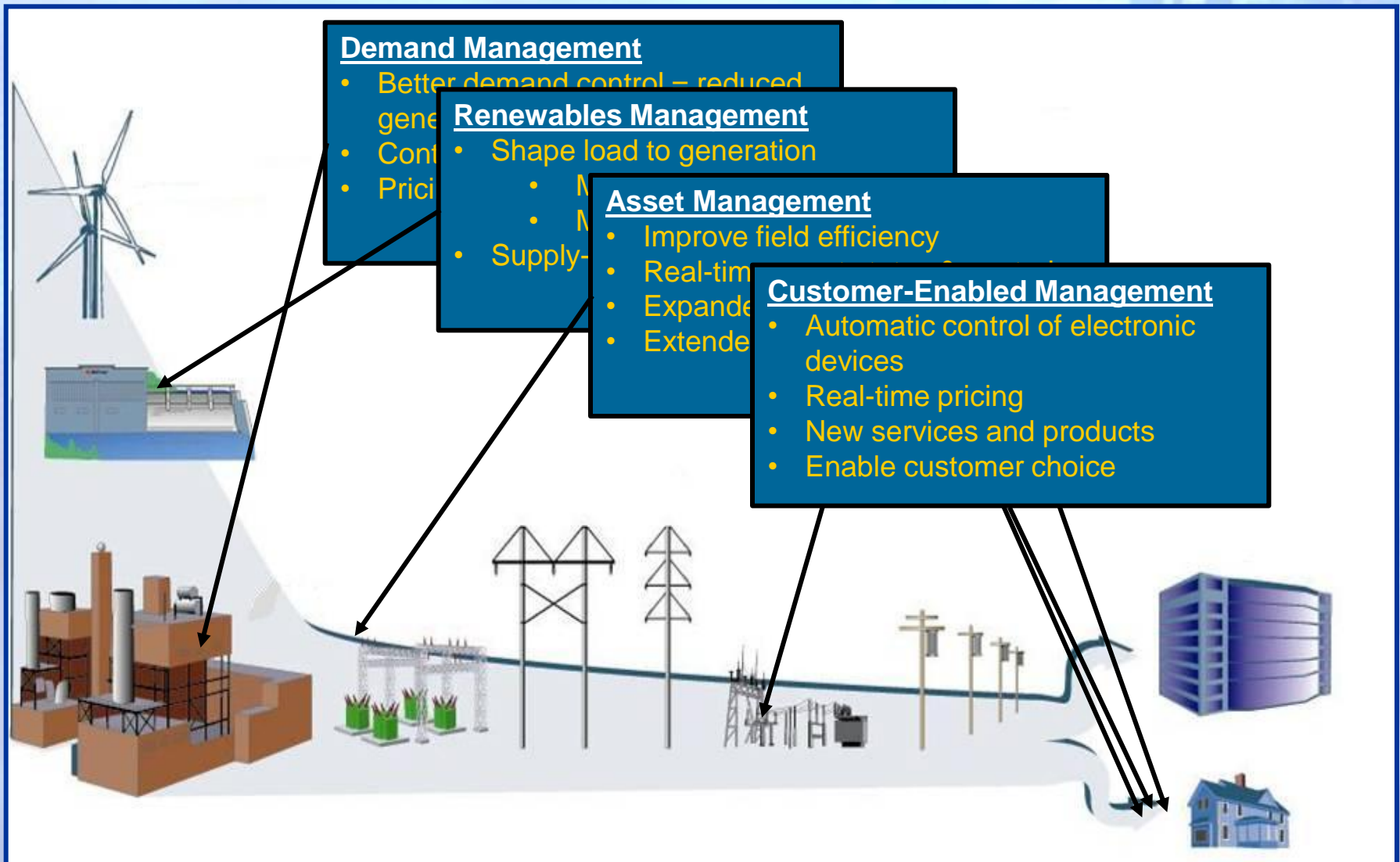




# In-Home Energy Management Devices



# Smart Grid Benefits



# **What's needed?**

- **New regulatory construct**
  - Utilities encouraging customers to use less electricity
  - Utilities offering customers more services, rather than just product
- **Cost recovery for investments made**
- **National smart grid standards to ensure interoperability**
- **Federal stimulus: should recognize previous investments, lower match**





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