

# Energy Efficiency

The original alternative and the *NEW* alternative

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Demand Response and  
Smart Grid Coalition

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# Energy Efficiency

- Conservation
- Energy Efficiency
- Smart Grid
  - Optimizing operations and delivery
    - Transmission
    - Distribution
  - Energy Efficiency (new era)
  - Demand Response
  - Engaging and incorporating the customer

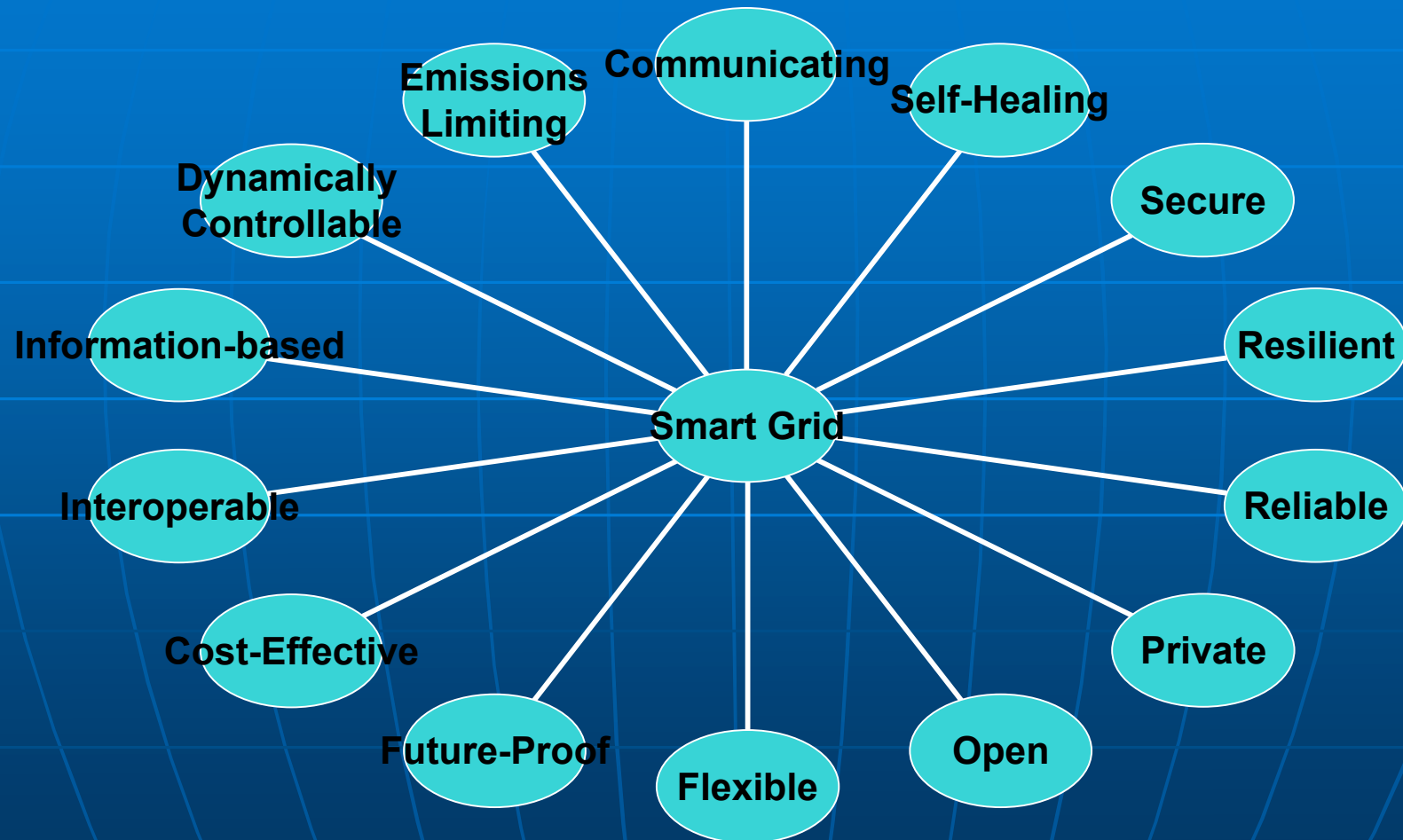
# Demand Response

- Time-based focus
  - 1% of the annual hours create 10-20% of the overall costs
- Dynamic, controllable efficiency
- Dispatchable, e.g. a virtual power plant
- Measurable and verifiable
- Automated and embedded or actively managed
- Technology examples:
  - Smart Meters
  - Smart Thermostats
  - Distributed Storage
  - Home area networks and displays
- Information and feedback
  - The “game-changer”

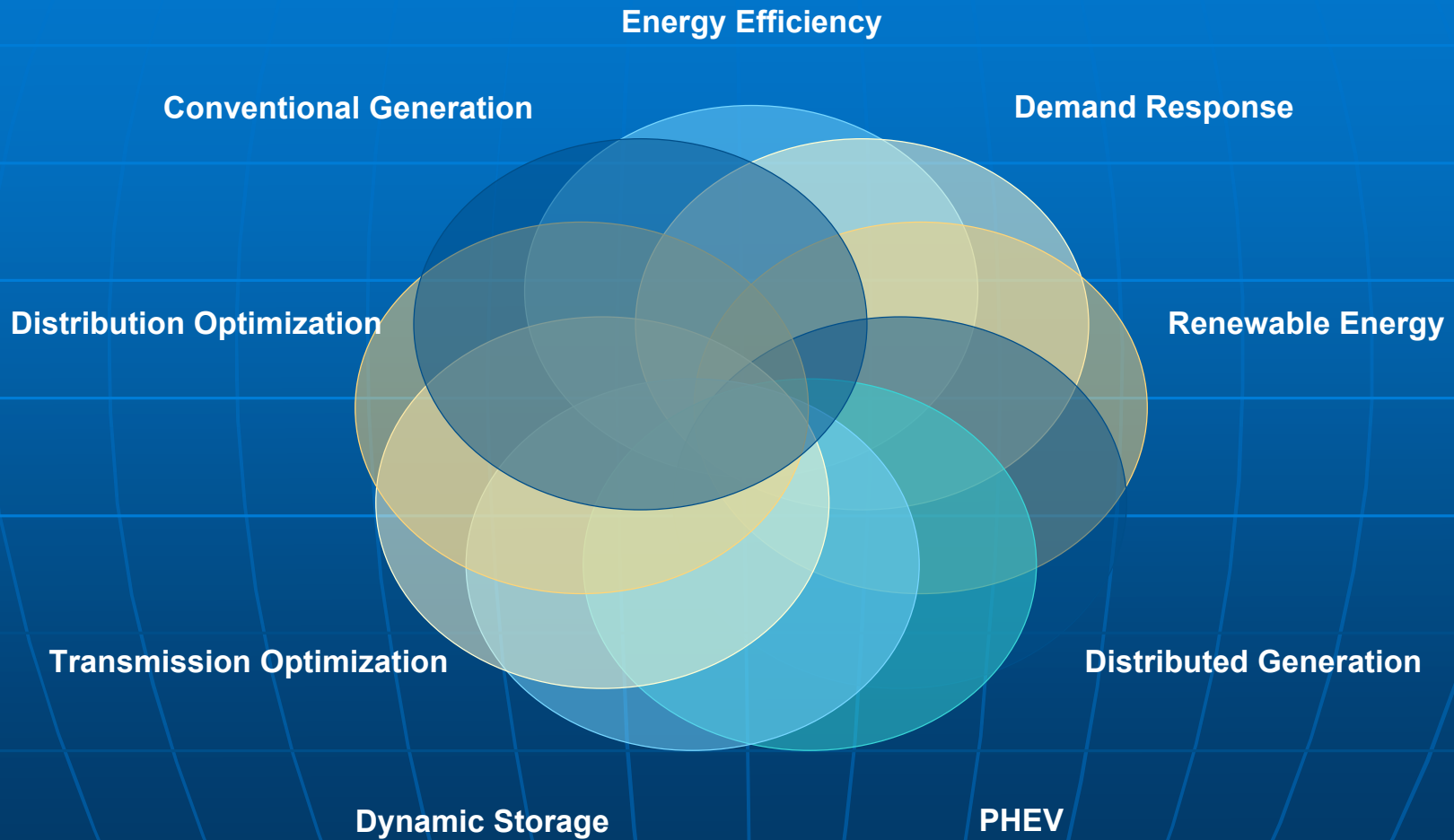
# Smart Grid – Why it's not so smart now

- Information, sensing and control technologies not embedded
- Operations and Customer Service not optimized
  - e.g. “rolling the trucks” during outages
- Not ready for integration of intermittent, variable renewable energy
  - e.g. “When the wind stopped blowing in Texas”
- Not based on time-based costs and prices
  - Cranking up the AC during peak period regardless of costs
- Customer is in the dark (from an information standpoint)

# Smart Grid – The Desirable Attributes



# Smart Grid - Resources



# Why the Smart Grid will Win

- Utilities realize the benefits for them
  - Modernization of their infrastructure
  - New means of operating their business
  - New options for maintaining reliability and security
  - New information about their customers
  - Ability to offer new choices to customers
  - Increased customer satisfaction
- Inevitable that technology available elsewhere will be applied to electricity
- Measurement and Verification will require it
  - CFLs vs Plasma TVs
- Customers "get it"...they see it elsewhere...they will want it

# The Prius Effect

- Consumers and businesses get less information about their electricity purchasing and consumption than in any other product area
- Consumers have been shown to reduce their consumption of electricity from 5-20% based on informational feedback
- Customers like having the technology in their home or business
- Smart Grid technologies and operations present an opportunity to get to one of the “Holy Grails” of energy efficiency
  - i.e, institutionalizing it in the way we operate our homes and businesses, and making it sustainable over the long run

# The New Era of Efficiency

- Time-based
- Dynamic
- Information-based
- Holistic approach
- Systems approach
- Behavior-based as well as technology-based
- Price Signals
- Smart
  - Smart Grid
  - Smart Systems
  - Smart Meters
  - Smart Homes/Buildings
  - Smart Appliances

# Challenges

- Investment is required
- New thinking on technology development and evolution is necessary
- New thinking on the role of customers in the grid is required
- Policymakers have to not only be on board but act to make/allow it to happen

# Opportunities

- Don't overlook use of block grant stimulus funds for new-era energy efficiency deployment
- Use of stimulus funds in general for infrastructure that will create long-term energy efficiency
- Apply the old saying: "how can you manage what you cannot measure"
- Technology for new era energy efficiency is available now – it is not a case of having to wait for it

Questions? Comments?  
Rebuttal?

Thank You

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