

# **Future of Industrial EE Technologies:** *Roles for States*

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ALLIANCE TO  
**SAVE ENERGY**  
*Creating an Energy-Efficient World*

# Overview

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- Technology opportunities
- Moving technology into practice
- Implications for state policy and programs

# Introducing the Alliance to Save Energy



- ***The Alliance promotes energy efficiency worldwide to achieve a healthier economy, a cleaner environment & greater energy security.***
  - Non-profit organization since 1977
  - Headquartered in U.S.; operations world-wide
  - Led by **Senator Jeanne Shaheen (D-NH)** and **Peter Darbee, Chairman of the Board, CEO and President, PG&E Corporation**
  - Bi-Cameral; Bi-Partisan Board includes 13 Members of Congress

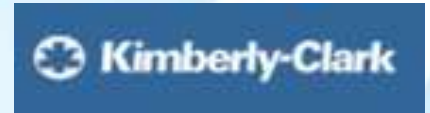


# Alliance Associates



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# Industrial EE Technology Opportunities Abound ...

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- Advanced Materials
  - Industrial Automation
    - On-site: process control
    - Off-site: Smart-Grid (auto-DR); supply chain
  - Process Improvements
  - CHP and Heat Recovery
  - Waste Stream Management
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*More technology info:* ETCC, E3T, ACEEE, LBNL, RMI, EPRI, GTI, ASERTTI...

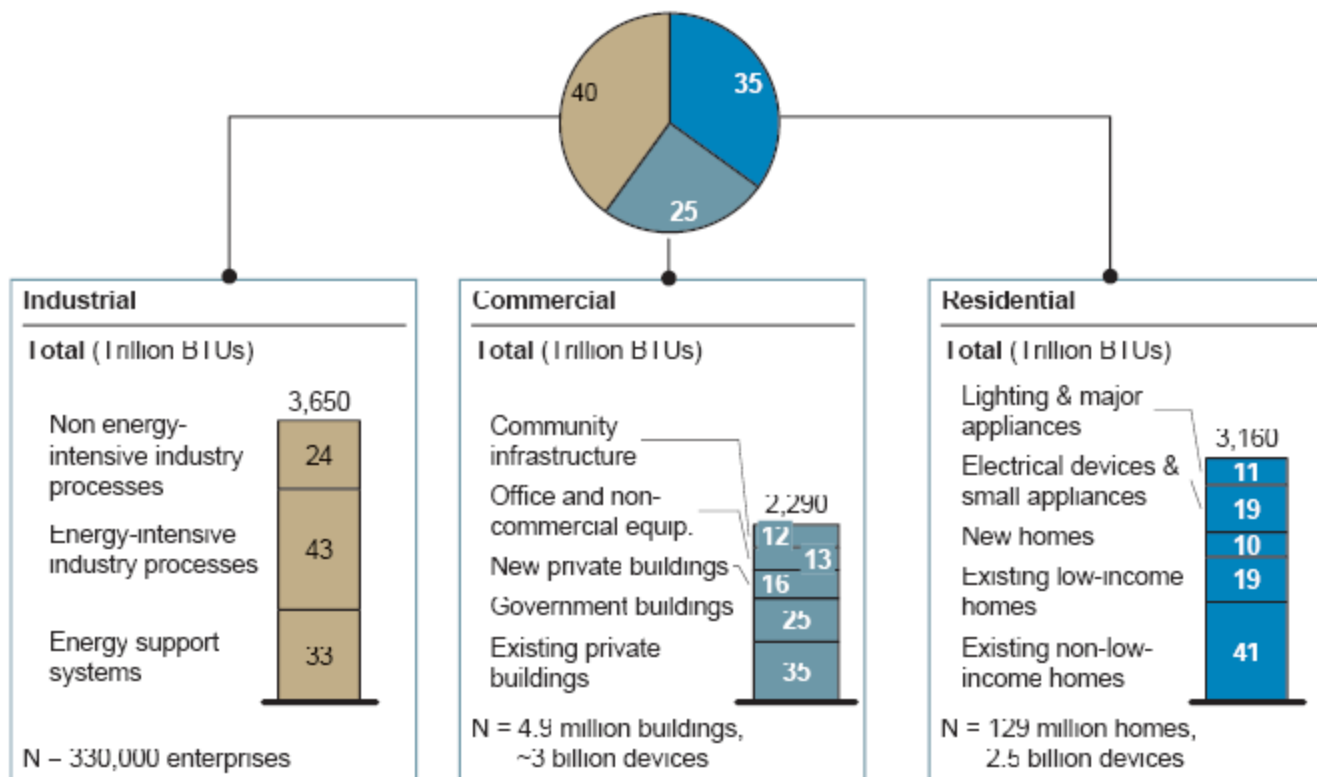


# Even McKinsey Agrees

## ("Unlocking Energy Efficiency in the US Economy")

### Exhibit C: Clusters of efficiency potential in stationary uses of energy – 2020

Percent, 100% = 9,100 trillion BTUs of end-use energy



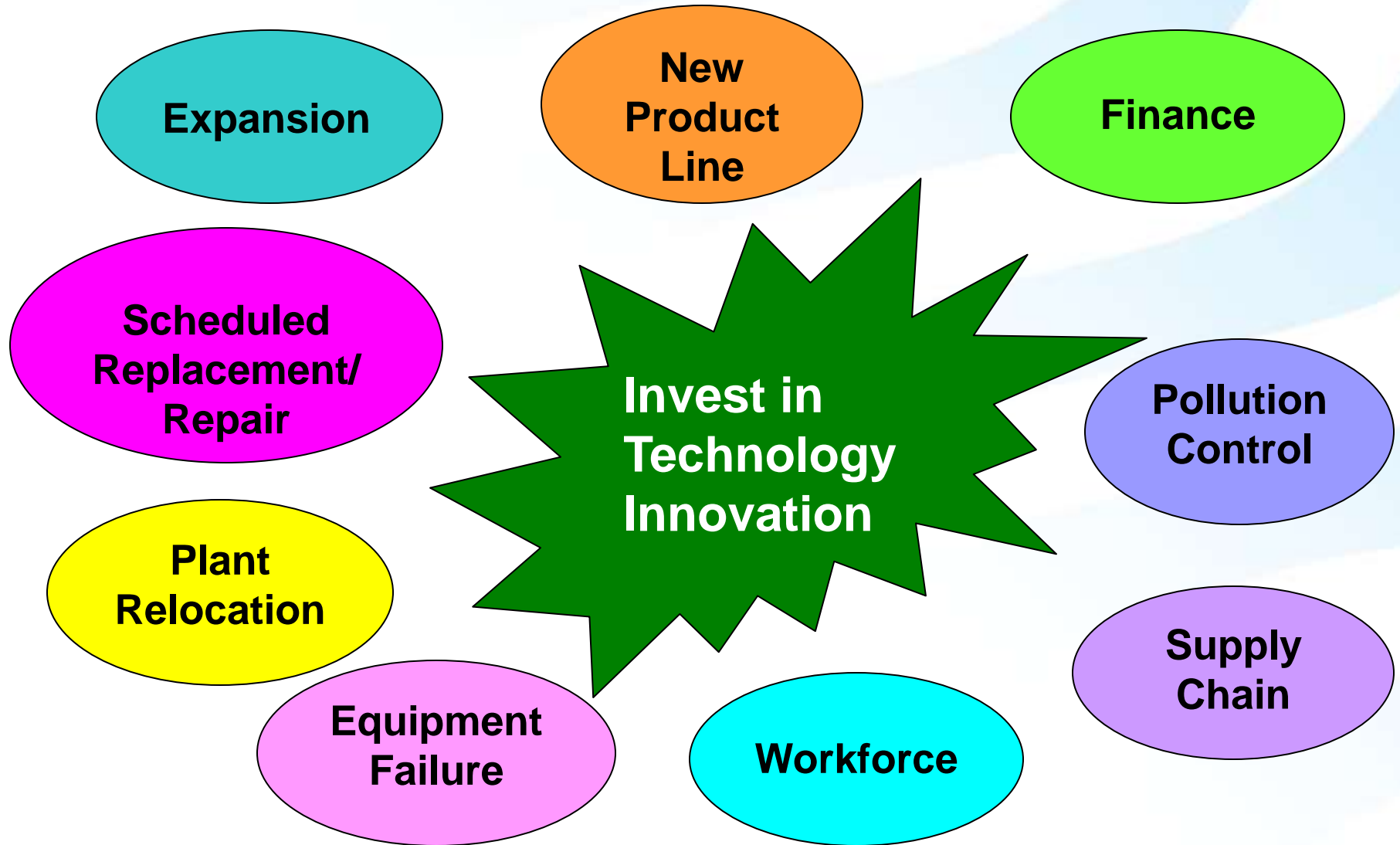
Percent, 100% = 18,410 trillion BTUs of primary energy

# ...but Investment Depends on Preconditions (Triggers)



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# States Can Influence those Preconditions

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## ■ **Connect with industry**

- Market assessments (define R&D needs)
- Demonstrations (CA PIER/CIEE “SPEED”)
- Demand aggregation
- Institutions (universities, Labs, MEPs, IACs)

## ■ **Connect other policies**

- Air/water pollution regulation
- Authorize (require) emerging tech’s in utility DSM
- Land-use, zoning, permitting
- Industrial development incentives that include EE



# DOE Program Emphasis Shifting (?)



***FY 12 Admin. Request up 224% (\$94 M to \$225 M)***

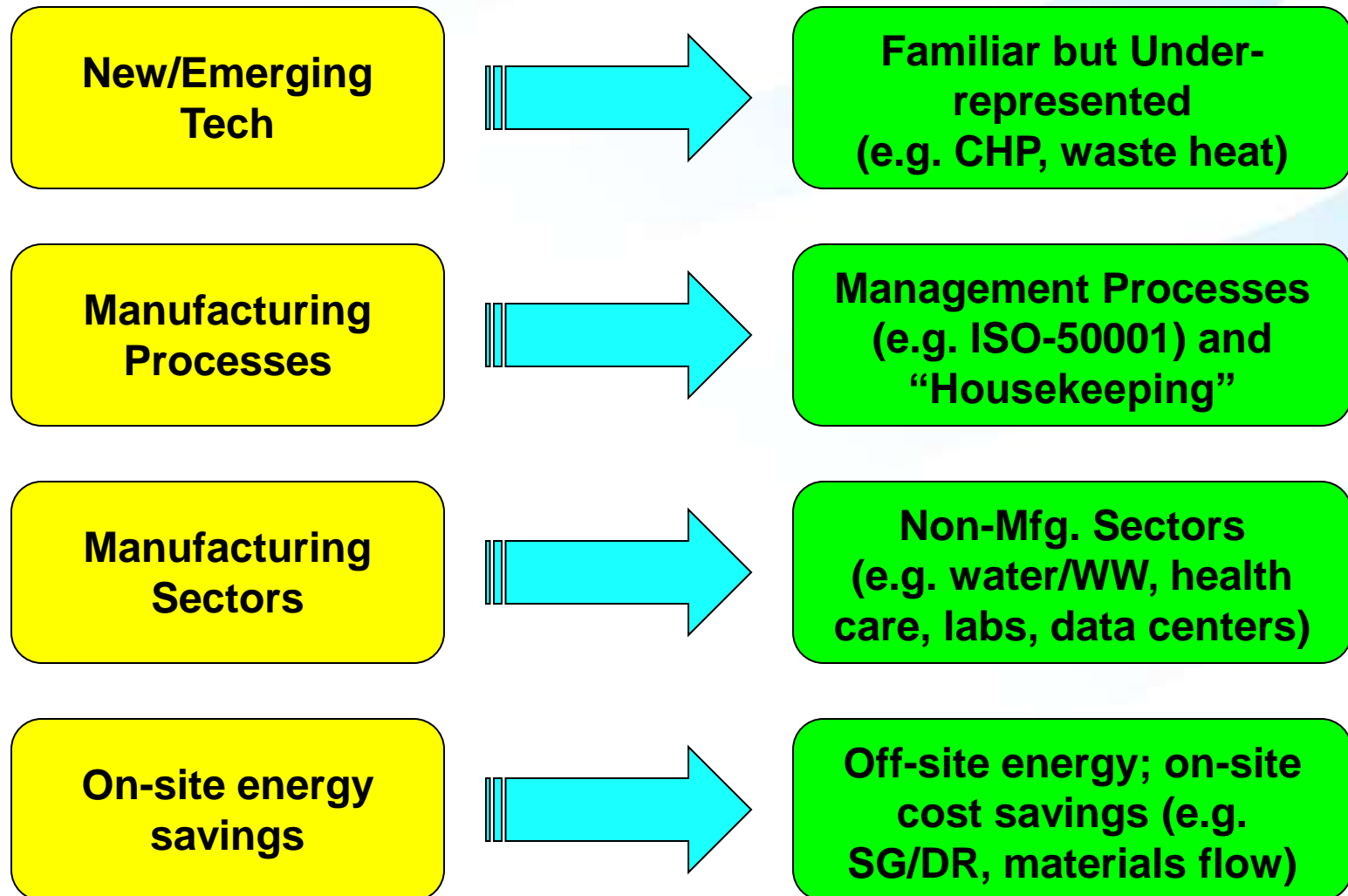
- **Next Generation Materials (+\$101 M)**
  - Energy Innovation Hub focused on critical materials.
- **Next-Gen. Manufacturing Processes (+\$77)**
  - Smart manufacturing, flexible electronics, bio-based products, manufacturing clean-energy systems
  - (Replaces IOF industry-sector-specific R&D)
- **Energy Efficiency Partnerships (+\$50.0)**
  - Continual EE improvement (“SEP”)
- **Industrial Technical Assistance (+44.1)**
- **Workforce:** “New generation of industrial engineers”

# Broadening the Technology Portfolio

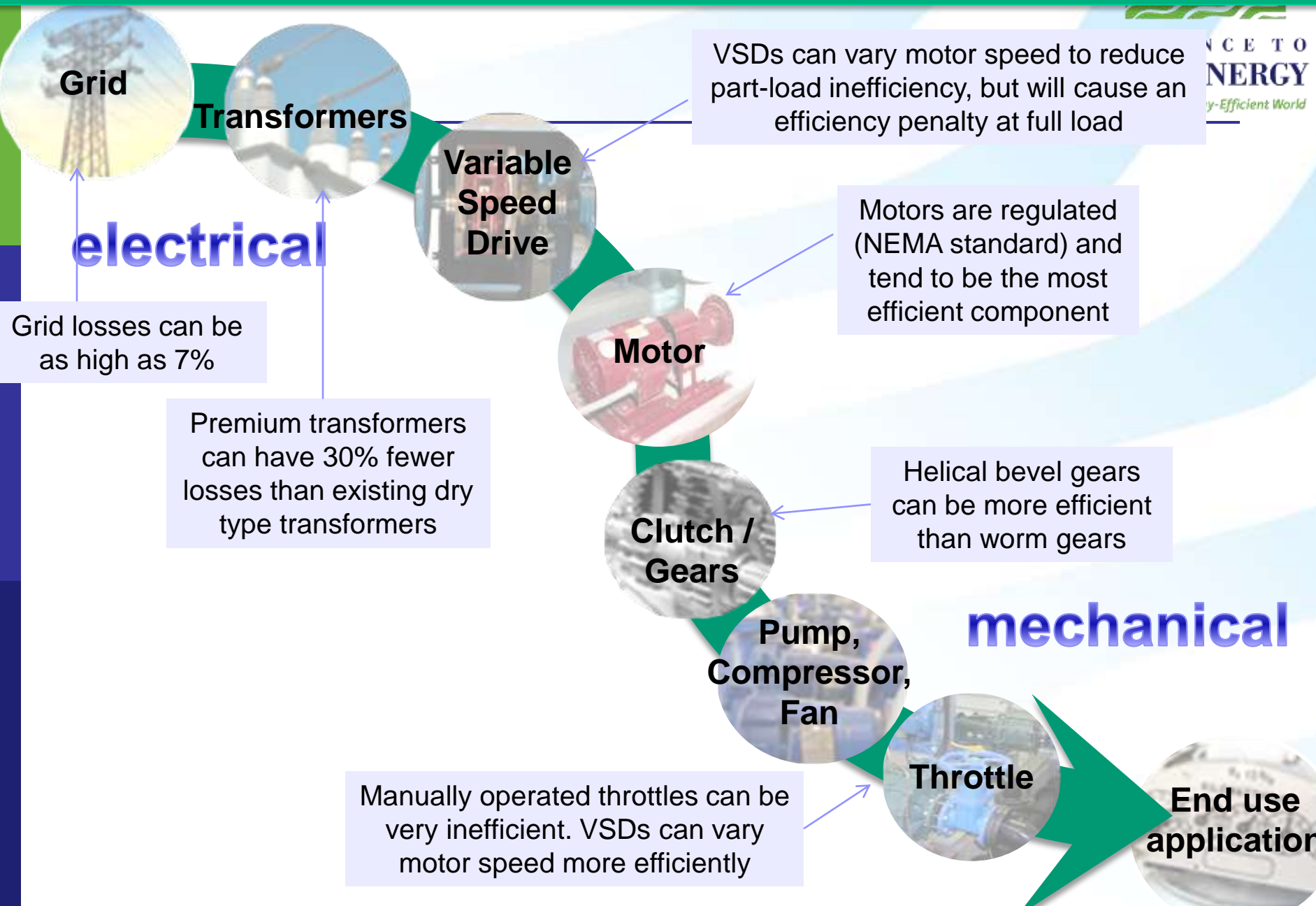


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# Think Big – and Small!



# Technology Innovation: Coordinate Efforts on Both Sides of the Market



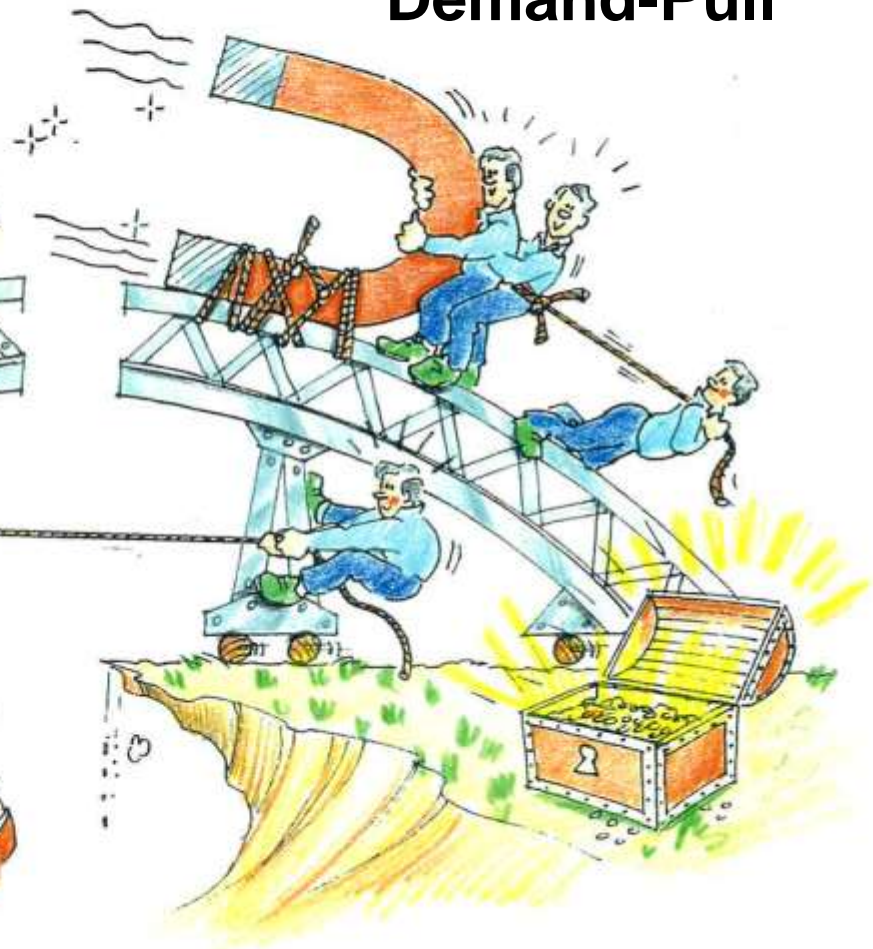
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## Technology-Push



## Demand-Pull



# Opportunities for State/Regional Collaboration



- 1) AQ Rules (protocols for EE as BACT)**
- 2) RD&D and ET Collaboration (w/ lead roles)**
  - *e.g., CEC/PIER emphasis on food processing, refrigeration, labs and data centers*
- 3) Demo Projects**
  - *Public infrastructure (universities, health care, water/WW)*
- 4) Apply MT model to industrial equipment**
  - *Test  $\Rightarrow$  Rate  $\Rightarrow$  Recognize/Incent  $\Rightarrow$  Standard*
- 5) Collaborative EE Technology Validation**
  - *ETCC, E3T, ASERTTI, GSA green test-beds, Navy TechVal, DoD ESTCP, etc.*
  - *Other models: EPA ETV (Environmental Tech Verification)*





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# Selected Resources

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- N. Martin et al. 2000. “Emerging Energy-efficient Industrial Technologies.” LBNL-46990.  
<http://ies.lbl.gov/iespubs/46990.pdf>
- Emerging Technologies Coordinating Council
  - Open Forum “speed-dating” (10/26) [www.etcc-ca.com](http://www.etcc-ca.com)
- E3T Network: EE Emerging Technology (BPA/WSU)
  - [www.E3TConnect.org](http://www.E3TConnect.org)
- IETEC Conference
  - <http://ietc.tamu.edu>
- ACEEE Industry Summer Study
  - [/www.aceee.org/conferences/2011/ssi](http://www.aceee.org/conferences/2011/ssi)



# Thank You!



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