Global Experience with Energy Efficiency Standards

Background for New Hampshire Energy Efficiency Resource Standard Stakeholder Process

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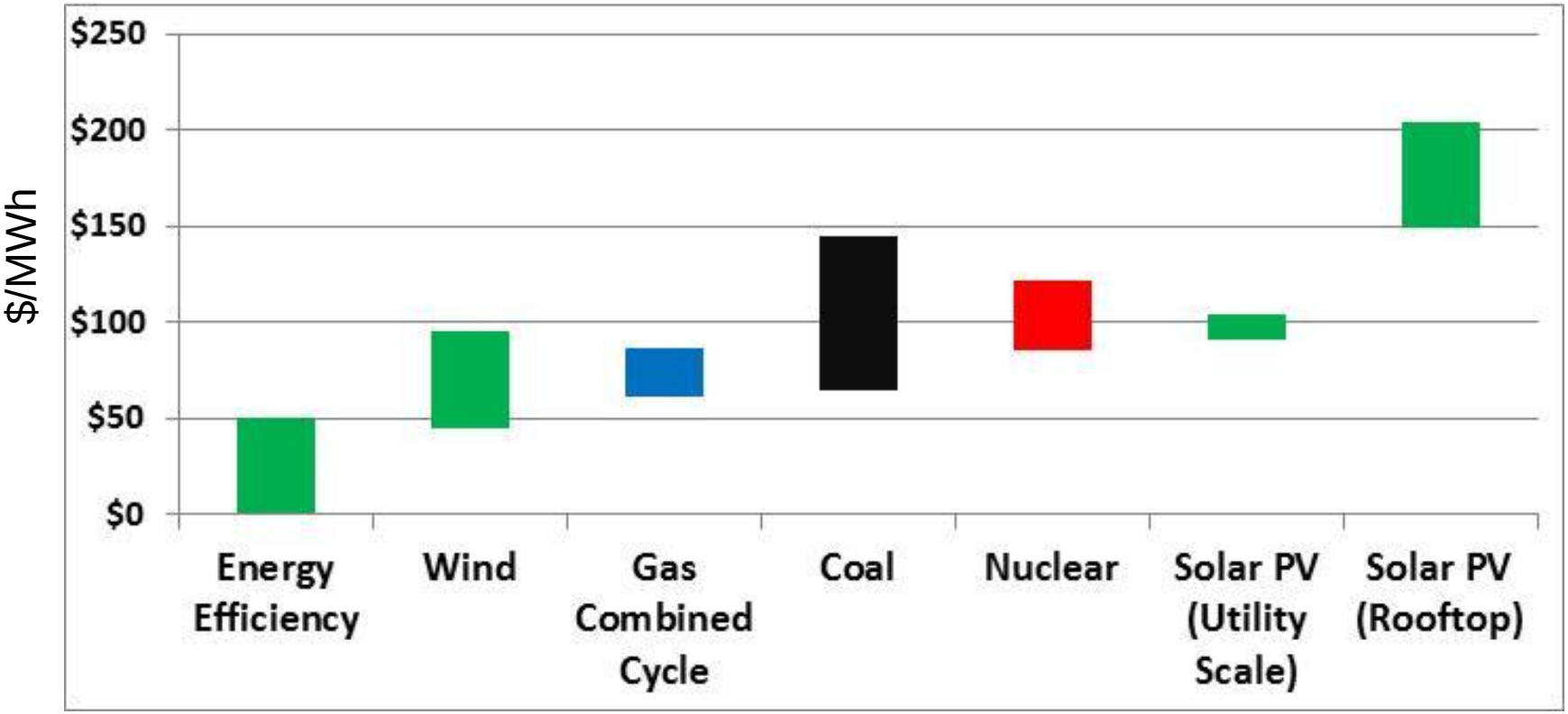
Contents

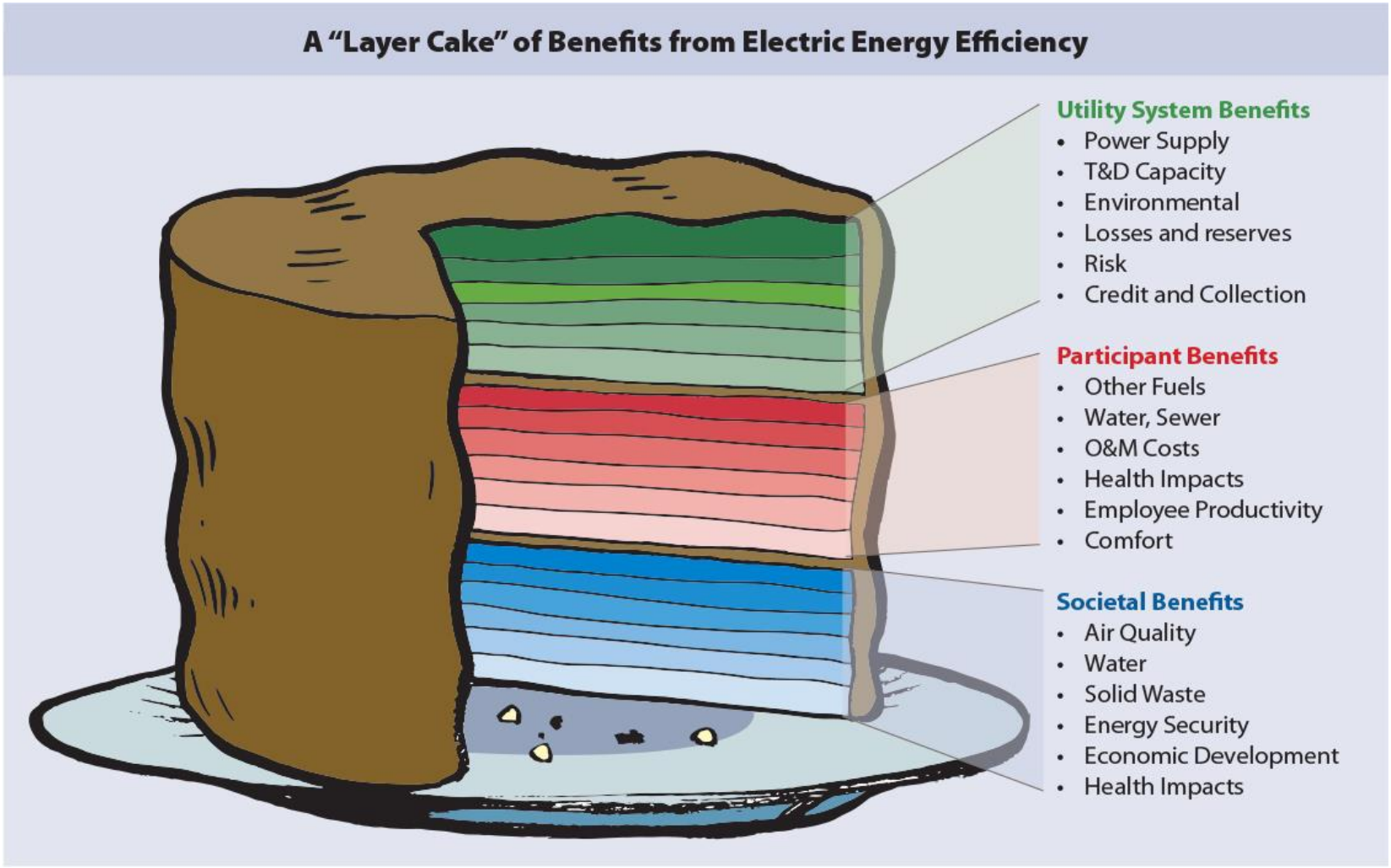
- Global and U.S. background on energy efficiency resource standards (EERSs) and energy efficiency obligations (EEOs)
- Will cover -Whom to place obligation on?; Target details; Administration; EM&V, process

Energy Efficiency Is the Lowest Cost Resource



Source: Lazard, 2014

EE Provides Many Benefits



The Confusing Nomenclature

USA: Energy Efficiency Performance Standard (EEPS) and Energy Efficiency Resource Standard (EERS) (USA)

European Union: Energy Efficiency Obligation (EEO) or Energy Savings Obligation (ESO)

IEA estimate: Globally over $13 billion/year on EE standards and obligations

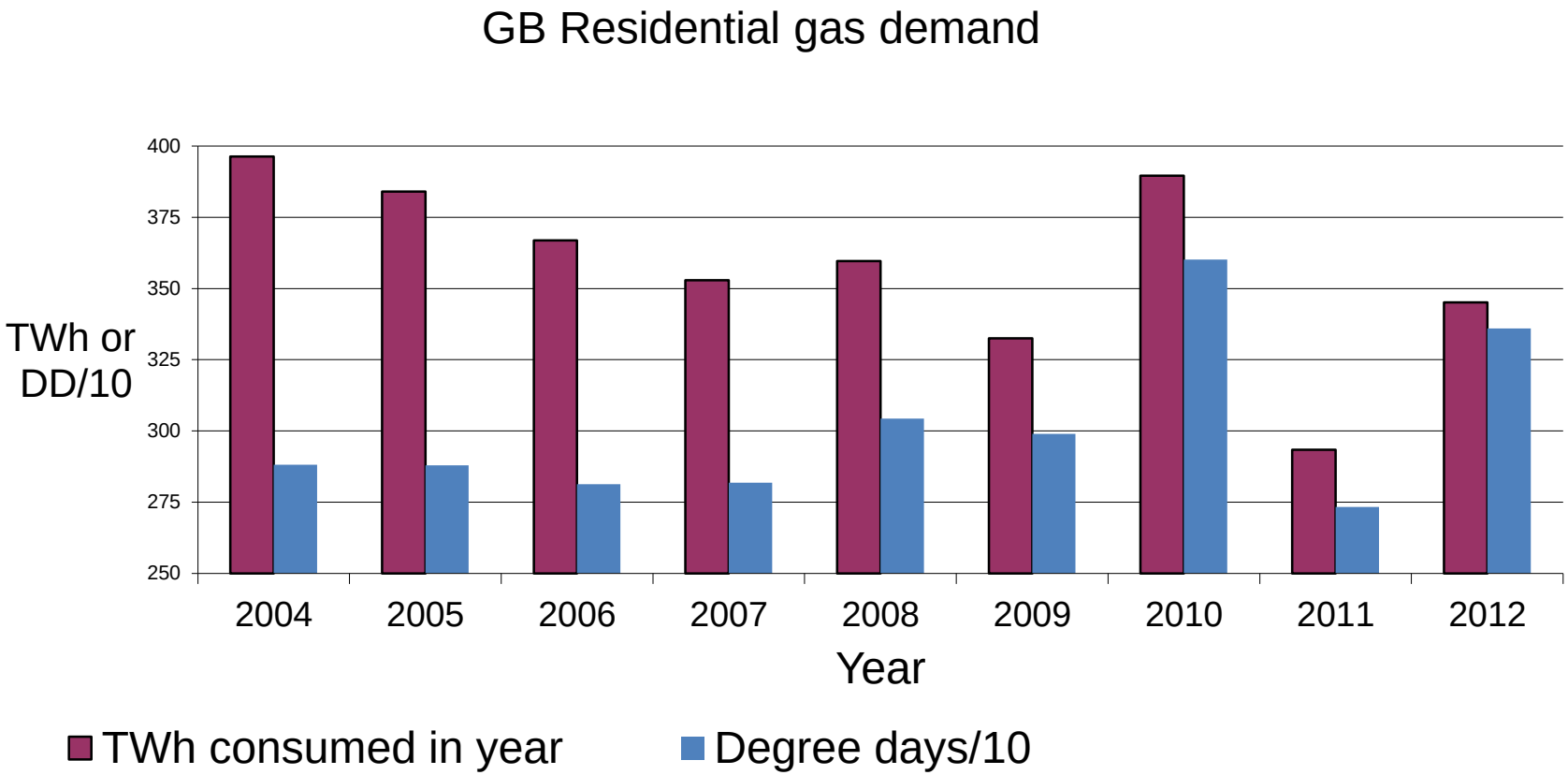
Why Involve Energy Stakeholders?

- Most programs involve or place responsibility for EE on the actors in the sector directly connected to the provision of energy and reliable service
- Experience and knowledge of the industry and measures is critical to efficient and effective EE
- Consumers need help to invest – (audits, advice, financing, incentives, etc.) Energy actors and companies can overcome barriers, work directly with consumers, or support those who do.
- Energy companies can be a stable source of revenues: avoiding ups and downs of annual public funding and receiving incentives for efficient delivery.
- Energy companies also have key roles in other parts of an EE policy package – reliability, standards, consumer education, smart metering and tariffs.

Range of successful approaches globally

1. Obligation on regulated distribution utility
   Italy; Denmark; Flanders; most US states; Ontario
2. Obligation on competitive energy retailers
   Great Britain, France, Ireland; 4 Australian states
3. Obligation funded by levy on distribution companies but administered by a third party *Vermont, Oregon, Hawaii*
4. Tender to all market actors *Portuguese regulator*
5. Performance Contracting with 3rd parties (other than the obligated entities) *Texas*

Annual GB residential gas demand (7% more customers between 2004-11)



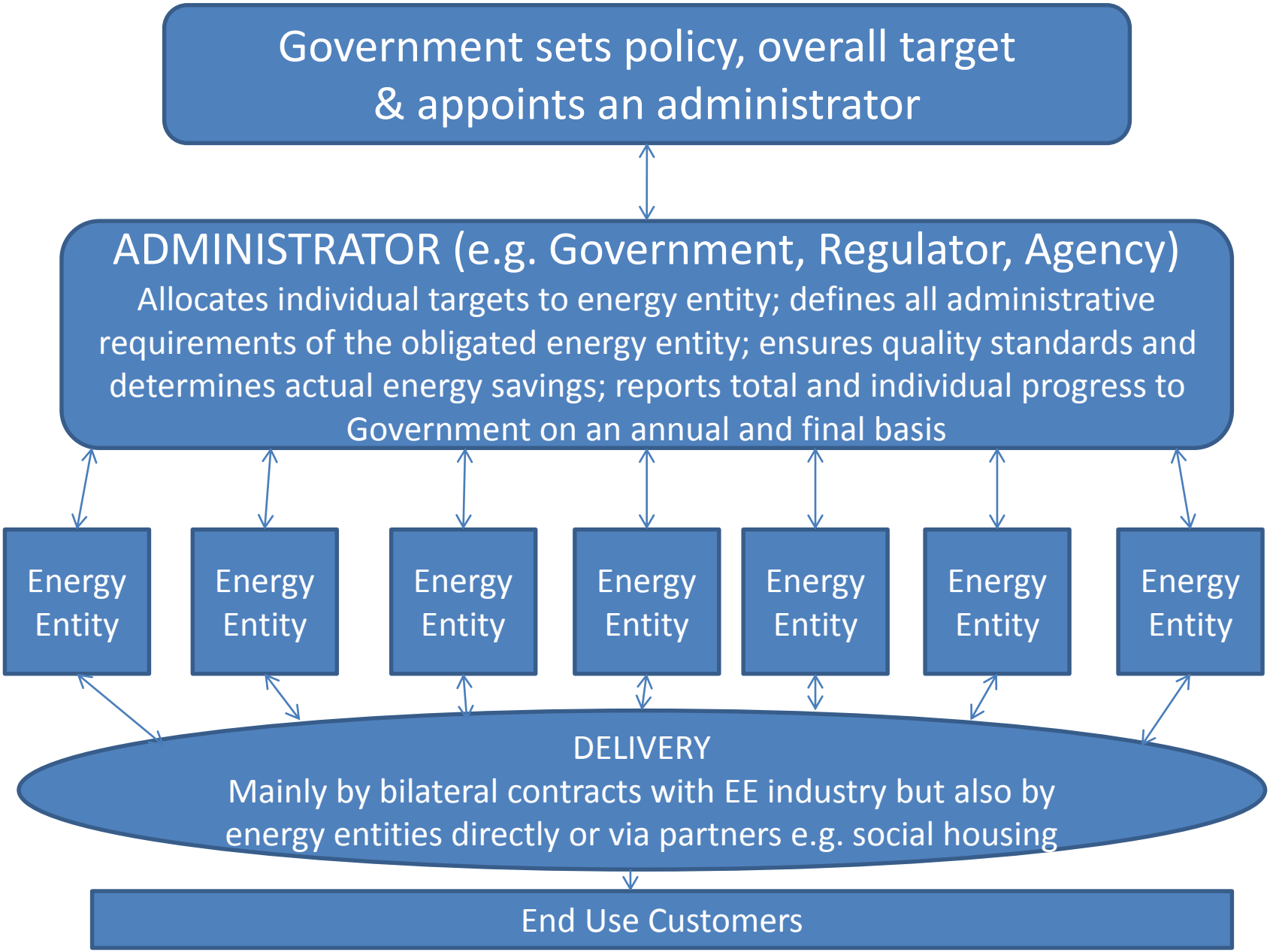
How is EE delivered?

The administrative structures used in the states fall broadly into four categories:

- Independent, non-government statewide organization
- Utility administration (ownership by investors, cooperatives, the public)
- Government administration at both state and local level
- Hybrid – responsibility divided between or among multiple administrators

Source: Who Should Deliver Ratepayer-Funded Energy Efficiency? Richard Sedano November, 2011, http://raponline.org/document/download/id/4707.

Typical administrative procedure for EU EEOs



Initial Administrative Considerations

Accountability and Oversight

- How is the budget set?
- Who participates in program development
- Public participation?
- Are measurement and evaluation metrics an integral, part of program design?
- Program evaluation?
- Process evaluation?
- How are results verified?
- Frequency of reporting
- Protocols and capabilities for periodic program review
- Can the effort be successfully managed and overseen at scale?

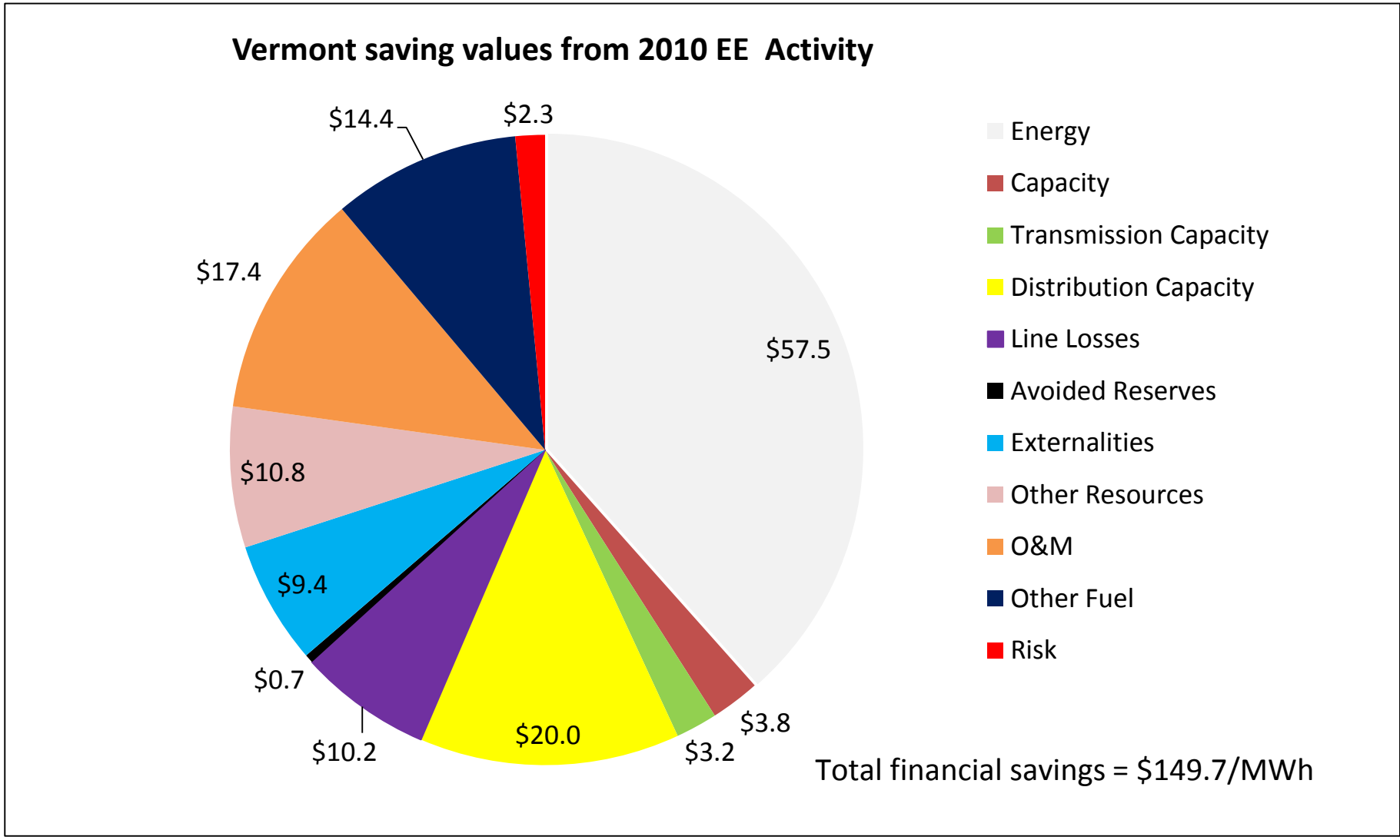
Administrative Effectiveness

- Efficient, non-redundant administrative costs
- Budget competency
- Ability to acquire and retain high quality staff, experts, and contractors
- Flexibility to adapt programs to evolving market conditions/opportunities
- Ability to target funds geographically
- Local options for program design
- Ability to facilitate timely payment of incentives to
- customers and trade allies

Globally, EERSs are highly cost-effective

- **USA state EERSs** save electricity for 3-4 US cents/kWh compared to 6-9 cents per kWh for generation cost alone
- **EU experience**: saving residential electricity or gas, costs less than 25% of the cost of that fuel to the consumer; costs of EE measures falls with economies of scale
- **EE can save** on transmission and distribution upgrades, lower reserve margins and line losses, no emissions, improves reliability, lowers peak loads
- **"Merit Order Effect":** In competitive power markets, lower demand also **lowers clearing prices for all consumers –** not just consumers who save energy
- In USA cases, non end-use benefits can justify the entire cost of the EE program

All Energy Saving Benefits from Vermont EERS



Challenges to Achieving High Levels of Energy Efficiency

- **Financing**: Energy efficiency is capital-intensive, and rating agencies do not treat investments in energy efficiency the same as they treat investments in power plants or transmission which is socialized.
  - Solution: System Benefit Charges, that fund EE programs from revenues.
- **Rate Impacts:** Energy efficiency increases costs, but decreases sales. As a result, rates increase.
  - Solution: While rates increase, bills to consumers decrease, and nearly every consumer benefits if programs are successful in achieving all cost-effective energy efficiency.
  - Broad-based programs ensure that there are few, if any, non-participants
- **Earnings Impact:** Utilities have historically profited from investment in power plants, and by selling more power.
  - Solution: Revenue regulation instead of rate base regulation; decoupling and lost margin recovery mechanisms.
  - Solution: Shareholder incentives, and poor performance penalties

Objectives and Goals?

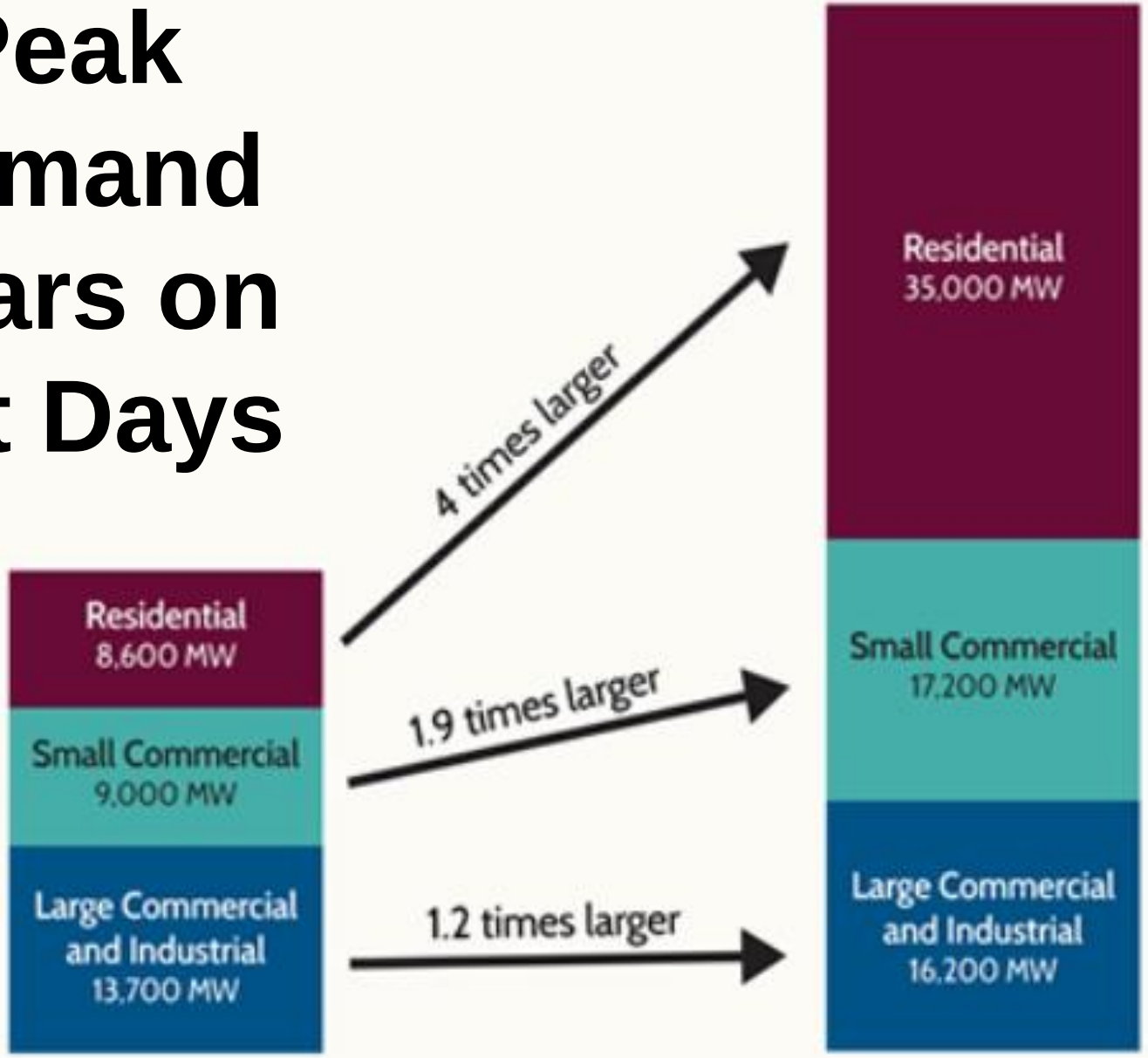
Goals can focus on energy market effects and bring in other consideration and metrics as well:

- Energy use reductions
- Consumer cost reductions
- Peak transmission/gas system reductions
- Encourage shift to certain clean in-state resources
- Economic Development/jobs
- Emission reductions for credit under Federal Clean Air Act requirements

Targeting EE at Peak Loads

ICE ENERGY®

Peak Demand Soars on Hot Days



Options for future EERS

- Funding: SBC, RGGI, capacity markets, other
- Leverage other funds: matching requirements, competitive bids, revolving loan funds
- Review Programs including
  - Program design and target details including
  - Large Customer/Industrial and Commercial
  - Low income
  - Program administration and eligibility rules
  - Operational procedures
  - Program(s) price transparency/conflicts of interest
  - EM&V

About RAP

The Regulatory Assistance Project (RAP) is a global, non-profit team of experts that focuses on the long-term economic and environmental sustainability of the power sector. RAP has deep expertise in regulatory and market policies that:

- Promote economic efficiency
- Protect the environment
- Ensure system reliability
- Allocate system benefits fairly among all consumers

Learn more about RAP at www.raponline.org

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