EDISON ELECTRIC INSTITUTE

The Supply Challenge

How Can We Meet It?

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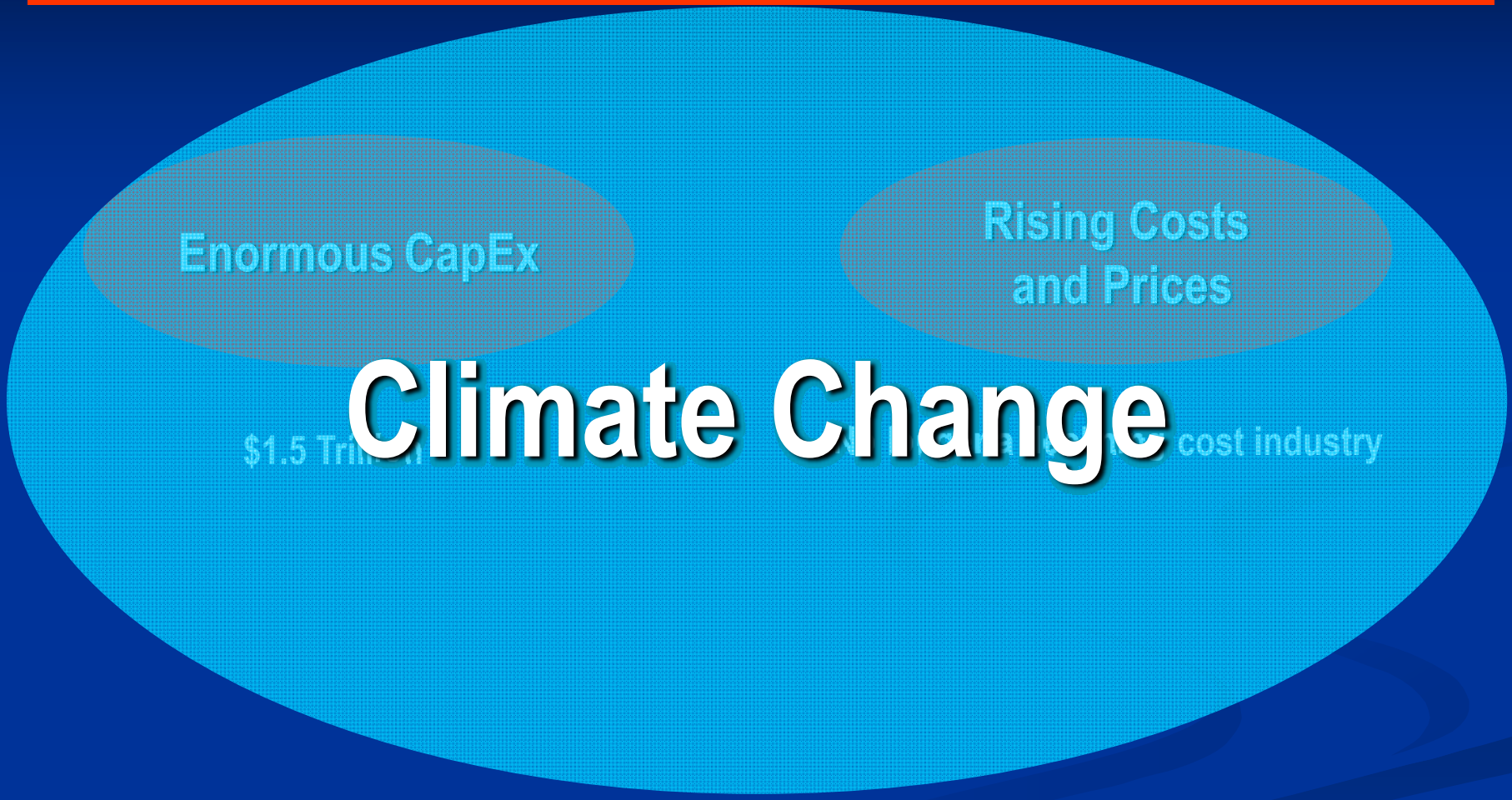
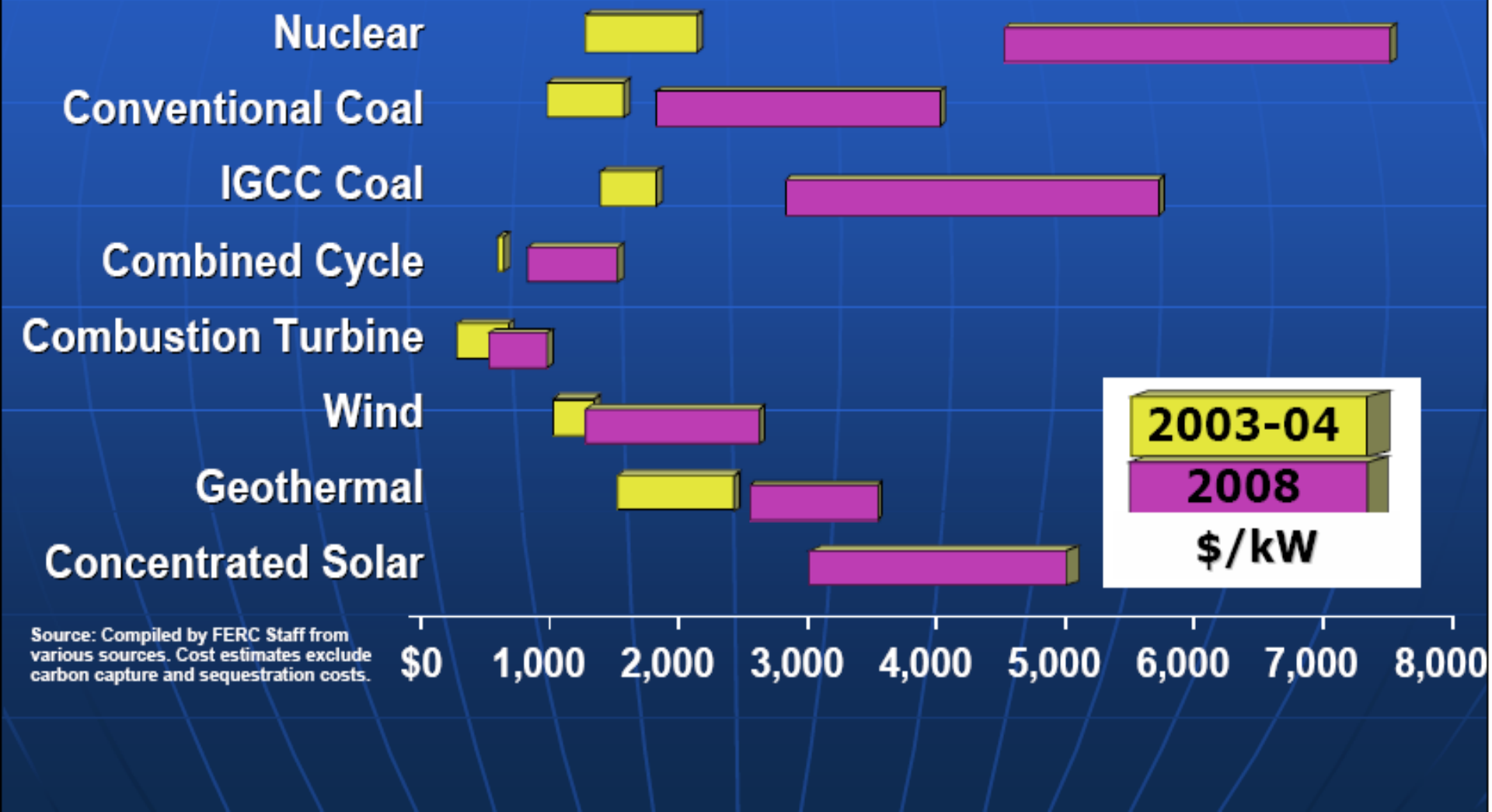
The Challenge of Balancing Core Drivers



The Capital Investment Challenge

- **Industry investment in all segments through 2030 will be on the order of $1.5 Trillion**
  - Generation $505 billion (133 GW, assuming RAP efficiency)
  - Transmission $287 billion
  - Distribution $588 billion
  - Energy Efficiency $85 billion (EE and AMI cost for RAP efficiency)
- **Estimates do not reflect**
  - Potential costs of new carbon policies that may be adopted
  - Potential new comprehensive federal energy legislation / policies
  - Potential new state energy policies
- **T&D investments significantly greater than projected generation investment**

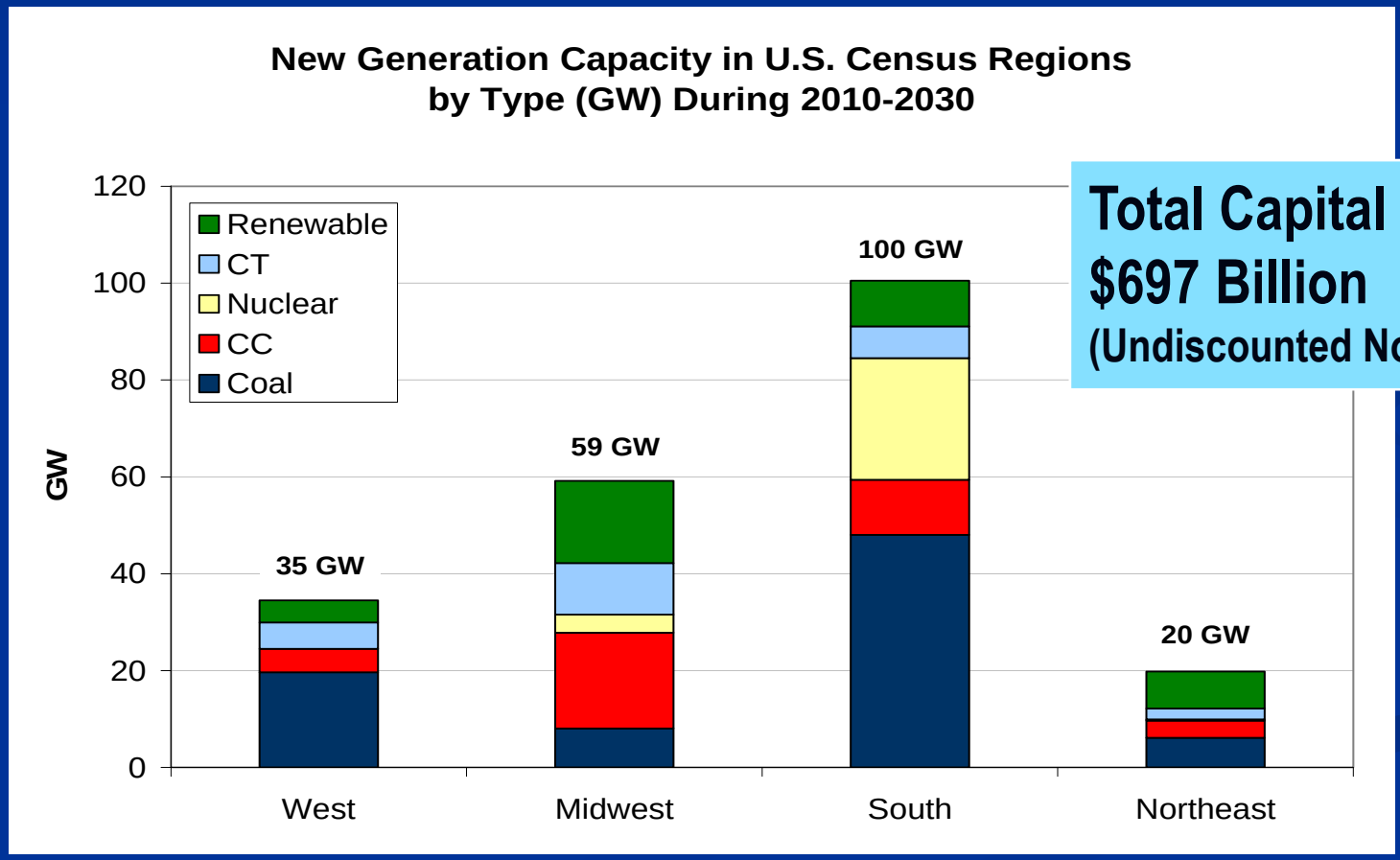
Estimated Cost of New Generation



Source: Compiled by FERC Staff from various sources. Cost estimates exclude carbon capture and sequestration costs.

Estimated Baseline For Needed New Capacity Build – 214 GW

- Uses Final AEO 2008 load growth projection
- Includes *Brattle's* most recent fuel and construction cost estimates
- Does not include aggressive energy efficiency and potential price response impacts



Total Capital Cost:
$697 Billion
(Undiscounted Nominal)

Prepared for the Edison Foundation by *The Brattle Group*

Energy Efficiency Potential
EPRI-EEI Joint Energy Efficiency Study

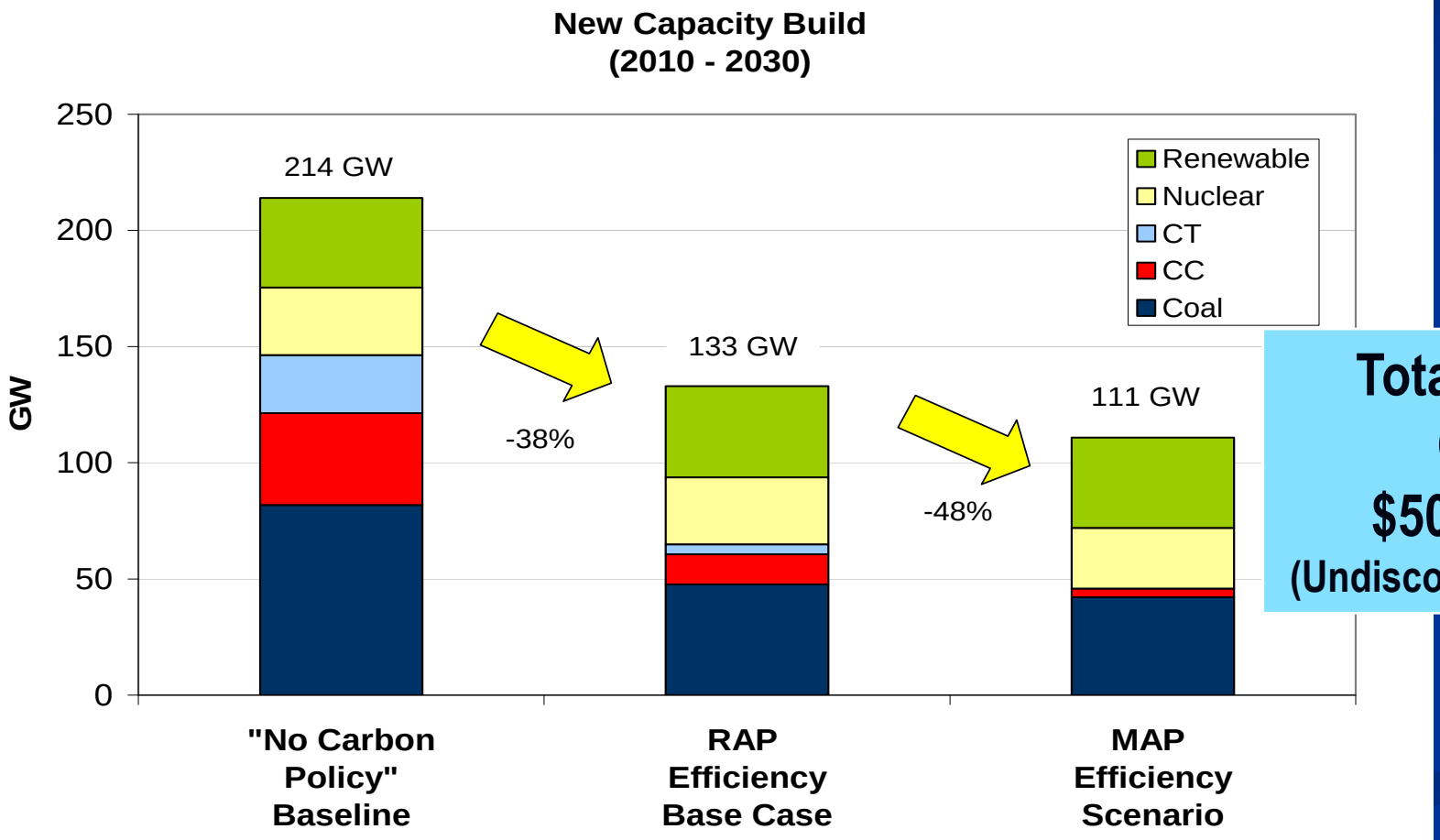
- **Analyzed Potential U.S. Energy Efficiency Savings 2008—2030**
  - Detailed micro-economic model based on equipment stock turnover
  - Comprehensive database of energy efficiency technologies and measures
  - Calibrated with opinions of 50+ industry experts, spanning utilities, regulators, government agencies and NGOs

- **EPRI – EEI Results**

  Realistic Achievable Potential Savings (RAP):
  - *Most likely impact* of expanded EE programs
  - Assumes moderate customer changes and penetration rates of existing efficient technologies

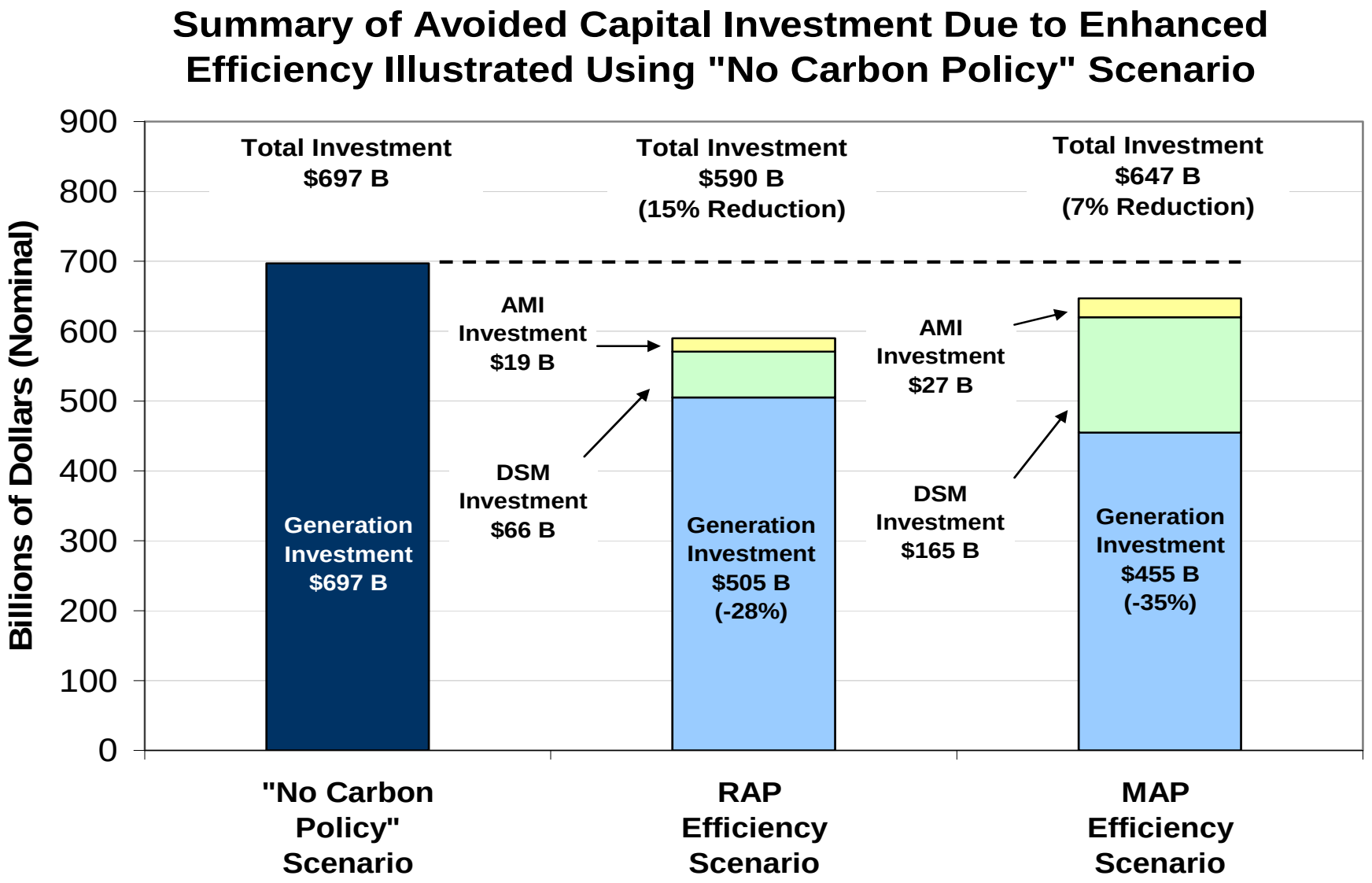
  Maximum Achievable Potential Savings (MAP):
  - *Higher-end of range of potential impact* of EE programs
  - Assumes a somewhat aggressive customer participation rate

EE Programs Can Reduce New Capacity by 38-48% – 133 GW

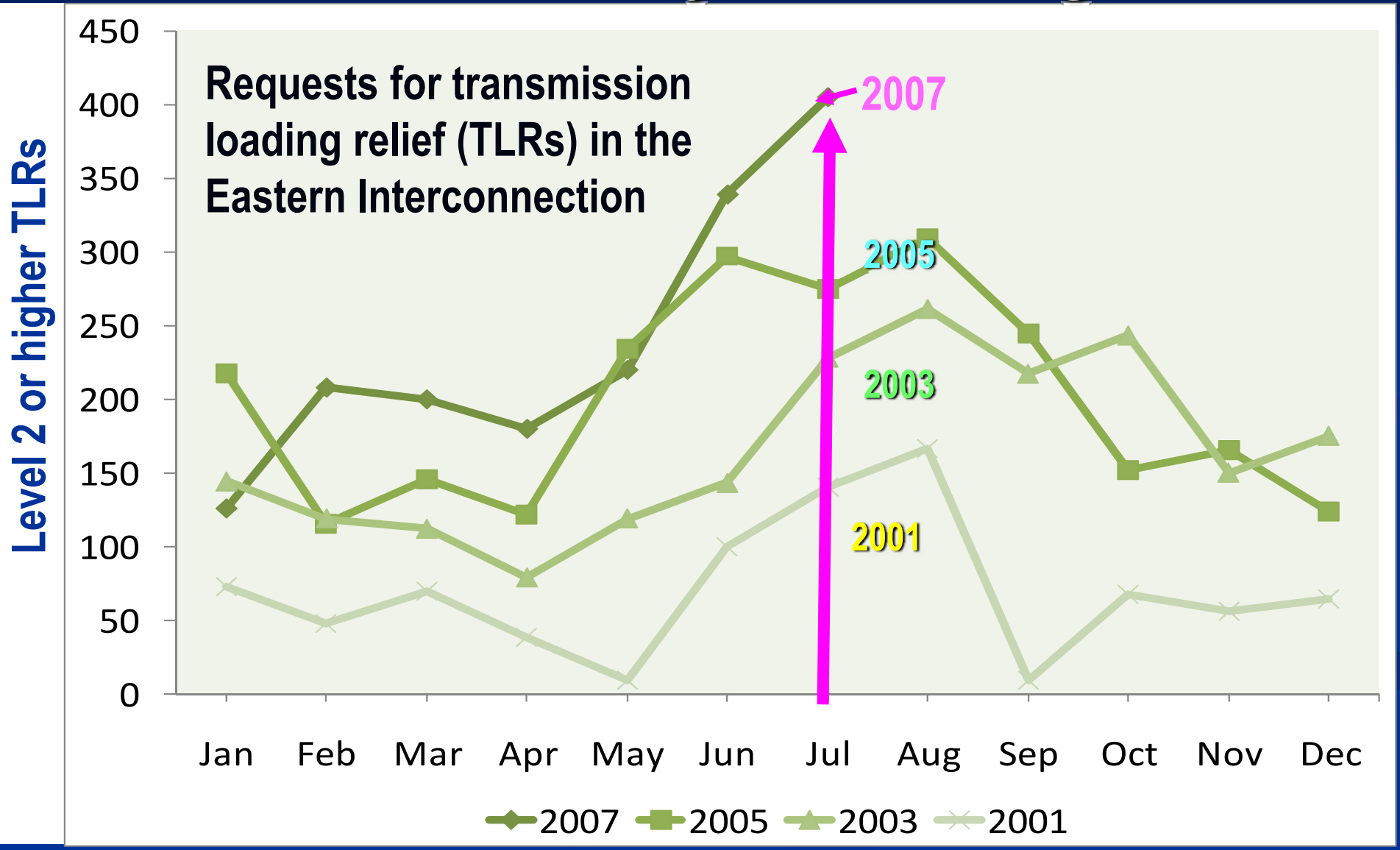


Total Capital Cost: $505 Billion (Undiscounted Nominal)

EE Cuts Generation Investment by 28% to 35%, Total Investment by 15% to 7%

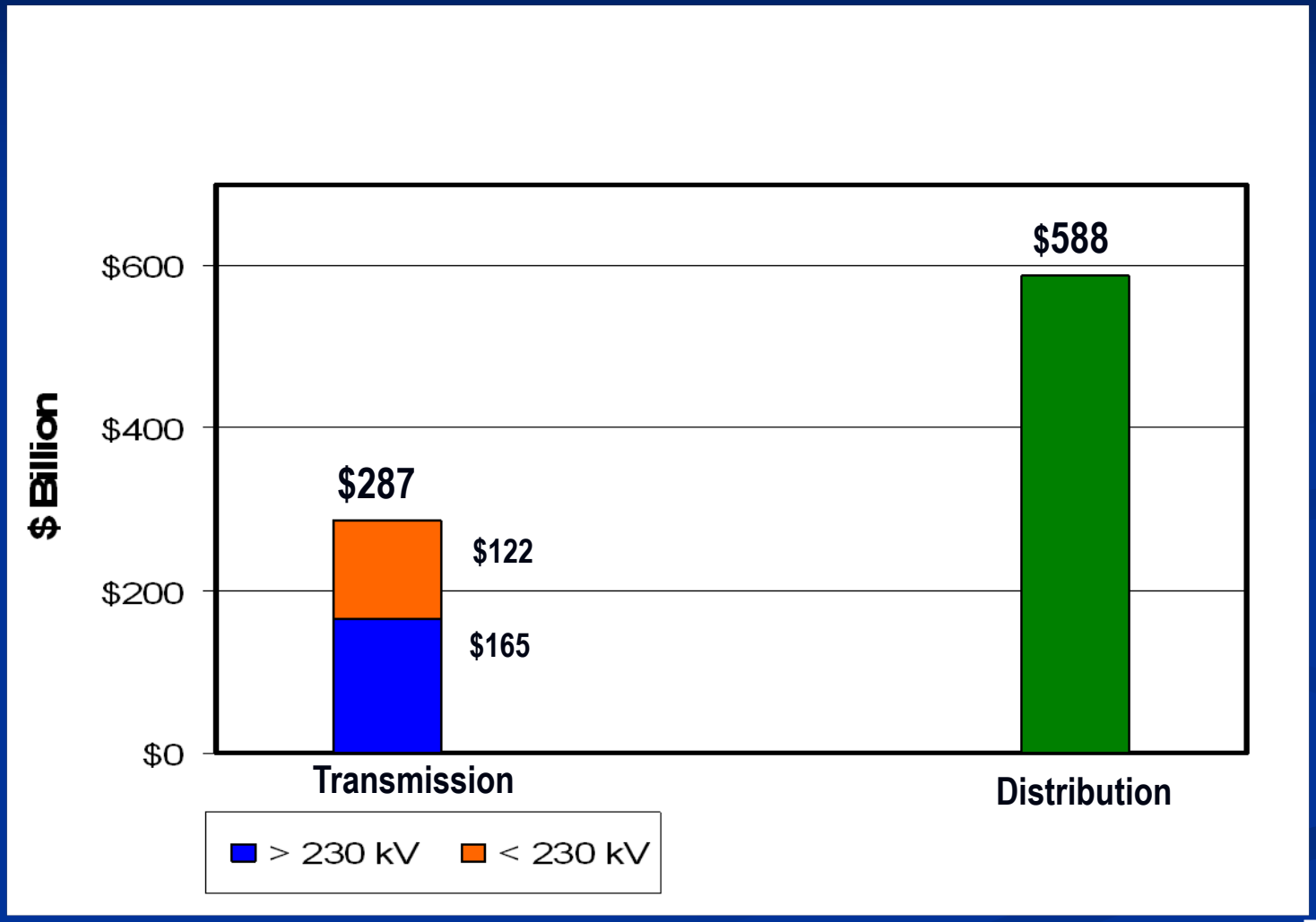


Transmission Congestion Dramatically Increasing



Source: NERC Transmission Loading Relief Procedure Logs

T & D Investment
2010-2030 – Including Smart Grid



The Supply Challenge
Additional Issues To Address

- Access to Capital
- Rate Shock
- Enhancing Wholesale Electricity Markets
- Impacts on Low Income and Fixed Income Households
- Workforce Challenges

How Are We Going To Meet The Climate Challenge?

There Is No Silver Bullet!

- Energy Efficiency
- Renewables
- Clean Coal Technologies
- Carbon Capture and Storage
- Nuclear
- More Transmission Capacity
- Plug-in Hybrid Electric Vehicles
- Smart Technologies and New Rate Designs

We need it all … but it will be costly!

EEI