Edison Electric Institute

Power by Association℠

The Current and Future Needs for the Electric Power Delivery System

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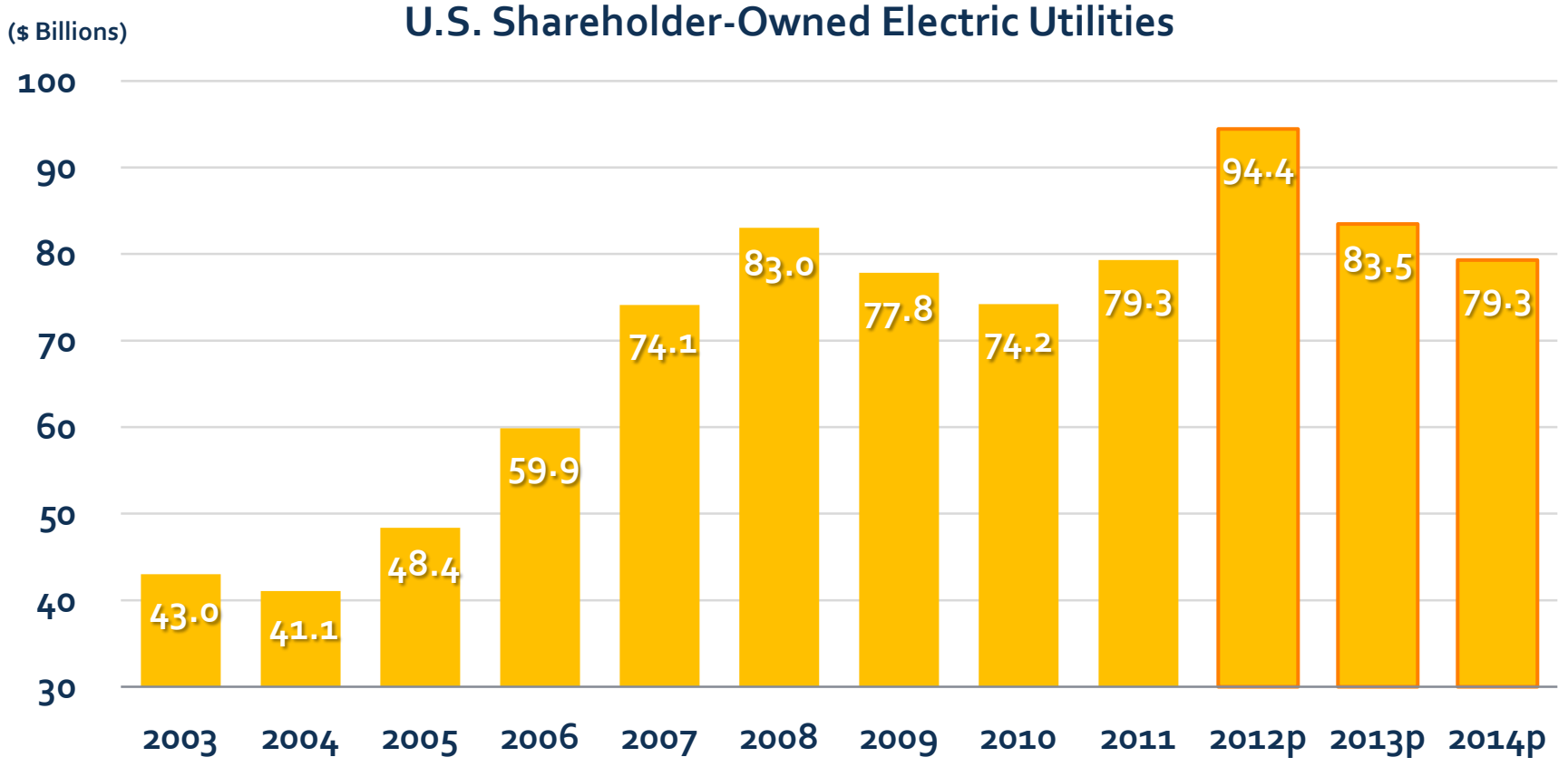
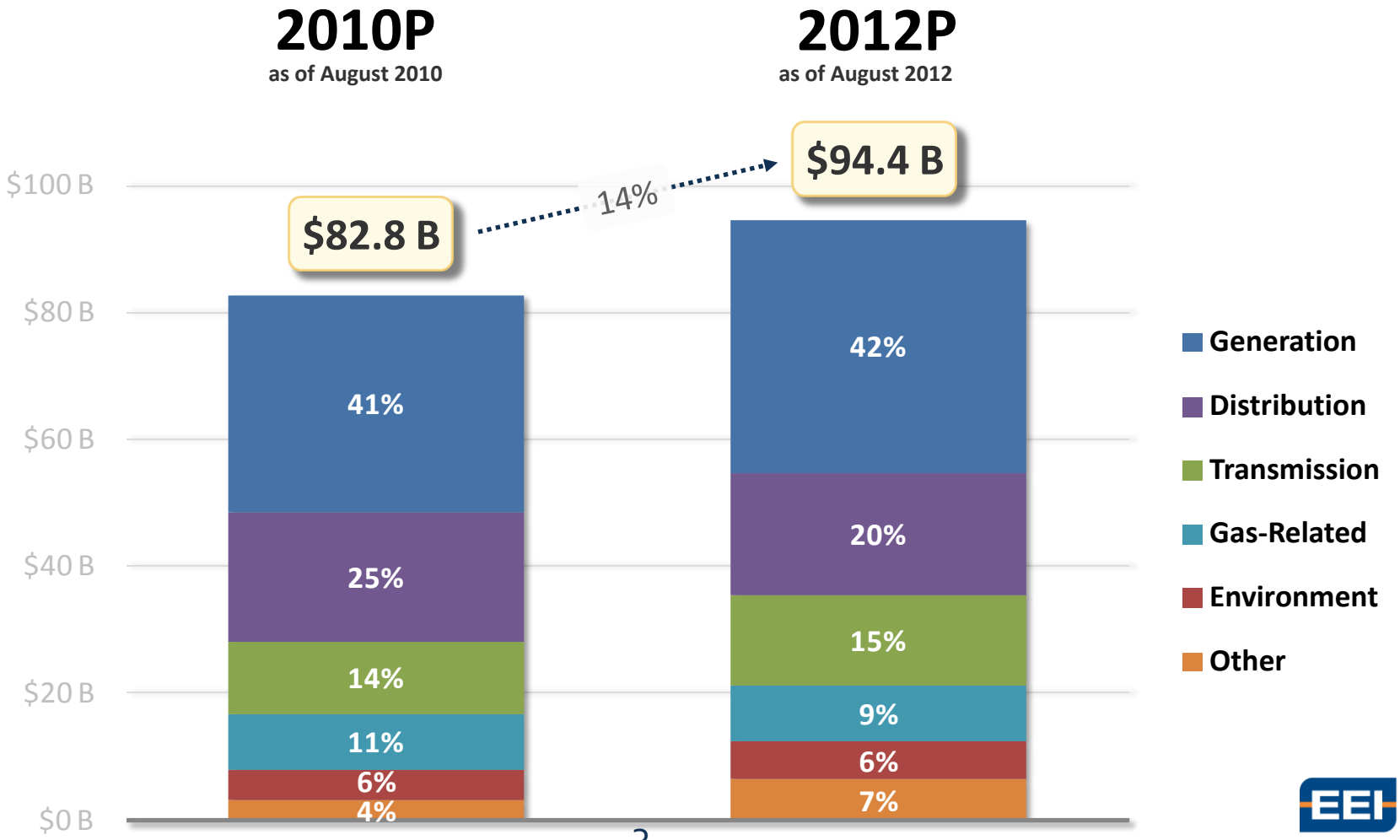
Industry Capital Expenditures



Source: EEI Finance Department, company reports, SNL Financial (August 2012)

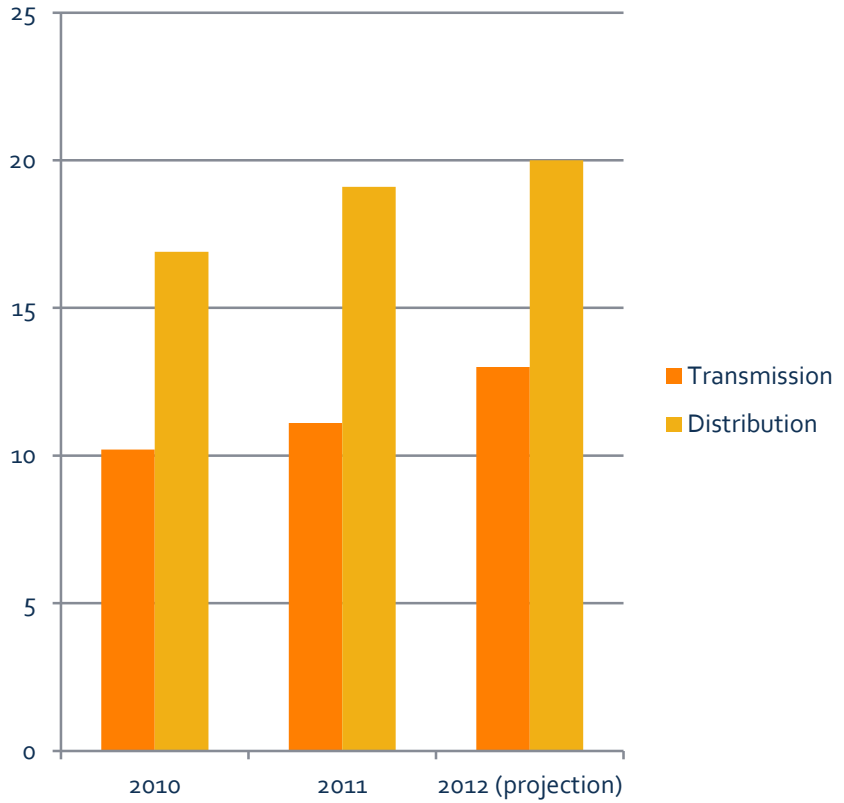
Projected Functional CapEx



Source: EEI Finance Department, company reports (August 2012)

Investment in Transmission and Distribution

- EEI's members invested a record $30.3 billion in T&D in 2011 (nominal $)
- Short-term future investment looks bright, project 2012 investment of $33 billion in T&D (nominal $)
- Anticipated decline in transmission investment post 2013 projected level, peak at $15.1 billion (real $2011)



Source: *EEI Annual Property & Plant Capital Investment Survey* [$Billions (Nominal $)]

The Distribution System Is In Transition

- **Customers are gaining new distributed energy resource (DER) options**
- **The structure and operation of distribution systems will change as "smart" infrastructures are built out and new DER are deployed**
  - Ultimately, power will flow in 2 directions across distribution systems

Public Policies Are Accelerating the Transition

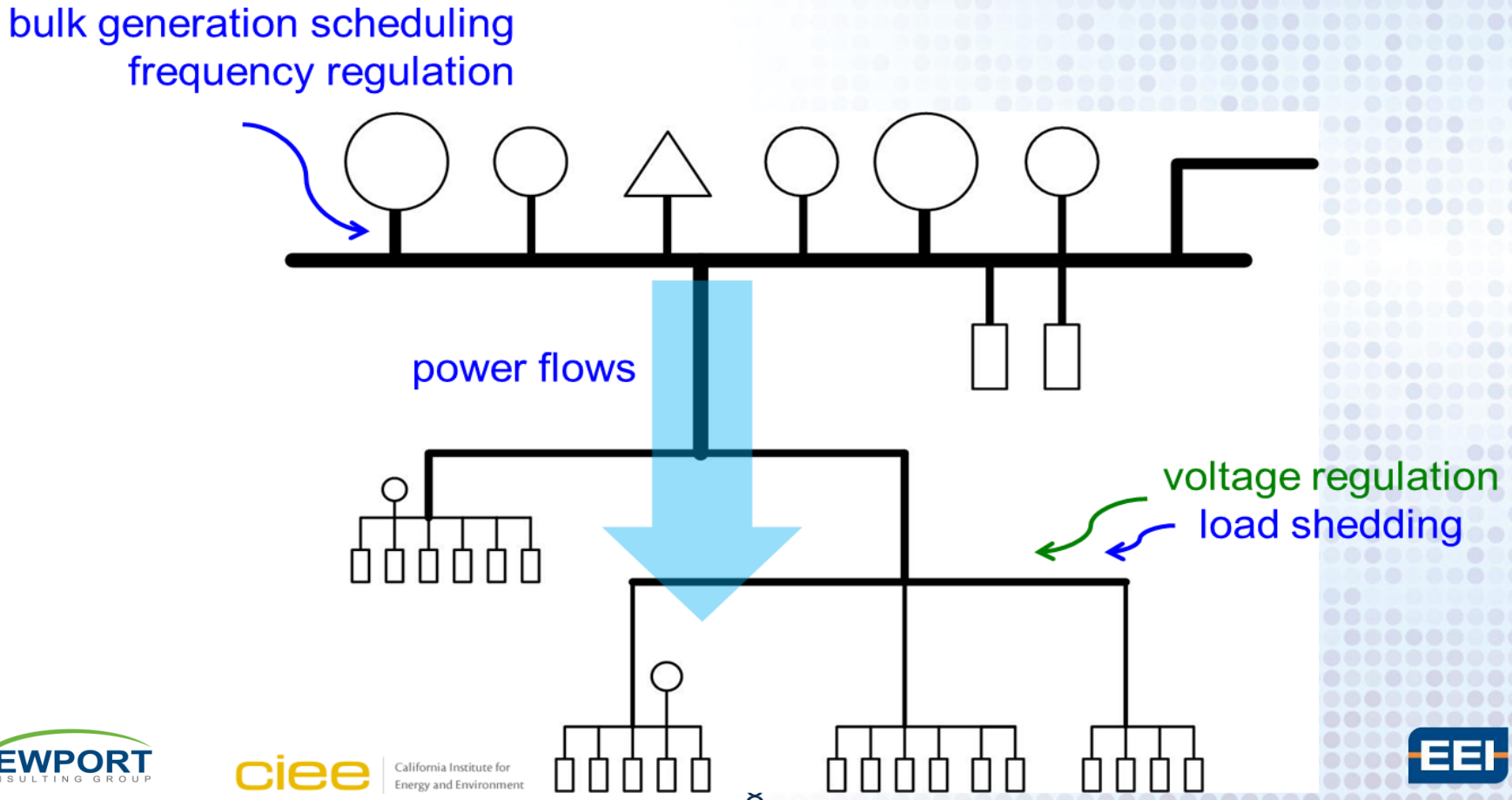
- 29 states plus D.C. have RPS programs, 17 with mandates for solar and other DG
- Net metering policies – present in 43 states
- Feed-In tariffs – adopted or proposed in a few states
- Virtual net metering – present in 14 states
- Subsidies, rebates, tax incentives, financing incentives. CA is providing $1.9 Billion over 10 years
- Zero net energy goals and targets, microgrids (??)

Other Factors Contributing to the Transition

- Department of Defense, the largest energy user in the U.S., is actively seeking to implement renewables, "islanding" policies, and virtual net metering
- Higher retail electric rates
- Declining cost of PV
- Evolution of "smart" infrastructure technologies (power electronics, storage, sensing and measurement, controls), high speed communications)
  - ARRA funding for AMI deployment, smart grid demos

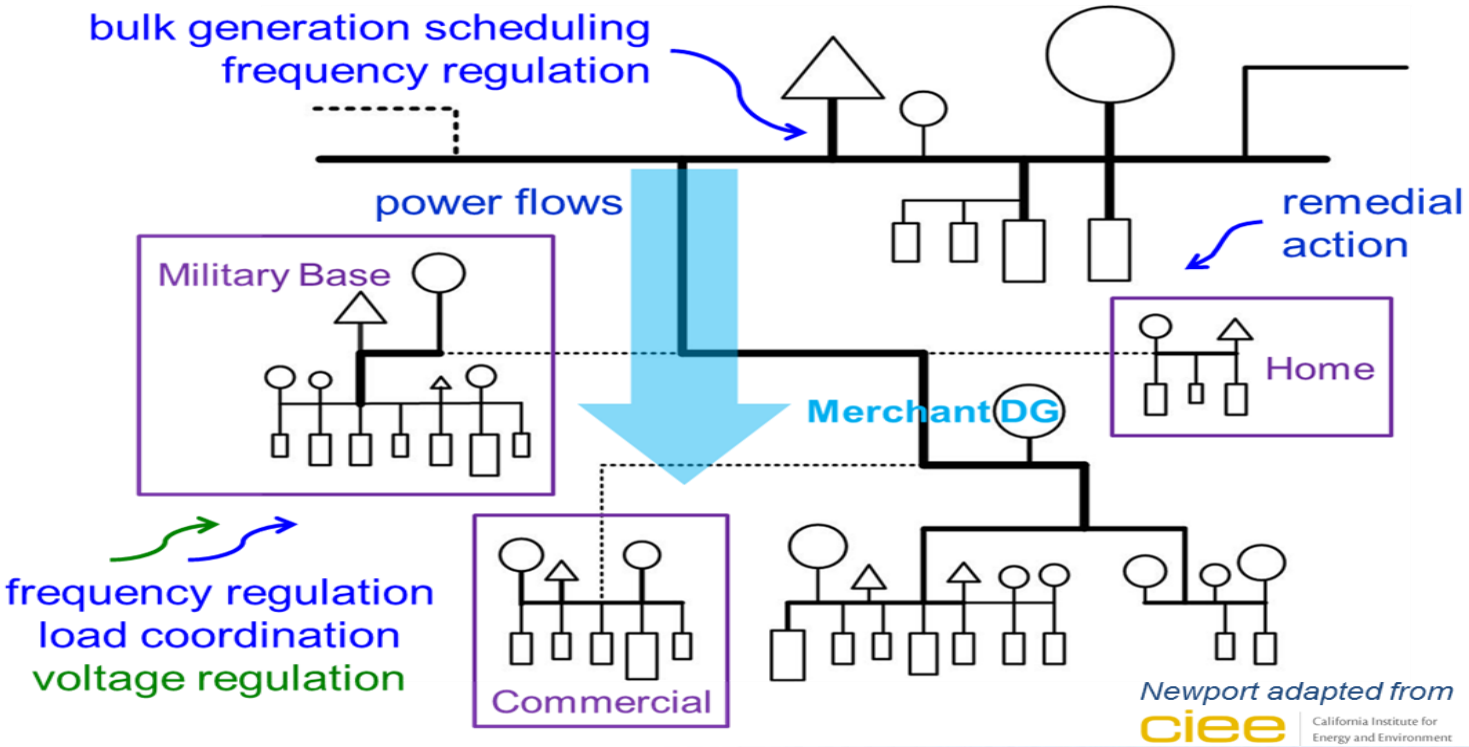
Operational Evolution: 1978-2001

Traditional Design: Controllable gen flowing power to deterministic aggregate load



Customer Micro-grids: 2002-2014

Instrumented & Intelligent: Increased DER will require better state information and decision support analytics



The Transition Will Drive Investment Needs

- **Legacy distribution systems will need to be re-developed to support bi-directional and variable power flows safely and reliably**
- **Investments in:**
  - Physical infrastructure – including interconnections
  - Operating systems
  - Communication systems
  - Risk management, including cyber-security
  - Coordination with transmission and generation systems
- **Technological obsolescence will be an increasing challenge**

Criteria for a Successful Transition

- **EEI and its members want to ensure that the transition is accomplished in a manner that protects**
  - Reliability
  - Safety
  - Fairness for all customers
  - Ability of regulated utilities to participate in evolving DER markets
  - Expansion of utility-customer collaborations
    - Universal buy-in that these investments are necessary

The Need for New Regulatory Policies

- **To ensure reliability:**
  - Ensure economic investments
- **To ensure safety:**
  - Update interconnection standards & procedures
- **To ensure fairness**
  - Innovative approaches to customer market segments

Cyber Security: Government-Industry Partnerships

- **National Infrastructure Advisory Council (NIAC)** – The recommended executive-level dialogue has resulted in a close working relationship between CEOs and senior government officials focusing on recovery and response
- **Threat Scenario Project (TSP)** – With The Chertoff Group, EEI companies identified potential attacks and mitigation practices to help industry defend against emerging threats
- **"Kaleidoscope" / NSA DIB Pilot** – Continuing to work with government partners to integrate government technology and threat information onto utility networks
- **Risk Management and Information Sharing** – There are several government-industry tools being deployed to assess risk, share information, and improve coordination