US Trends and Issues

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OVERVIEW

I. Energy Policy

- —National Energy Policy
- —Energy legislation
- —Other policy issues
- —“Outside the Beltway”

II. Utility Sector

- —Restructuring
- —DSM/PBF investments
- —Reliability + security

III. Opportunity Areas

ENERGY POLICY

- **National Energy Policy (2001)**
  - —Energy supply and efficiency provisions
  - —Technology emphasis; Federal R&D role
  - —Voluntary, market mechanisms
    (Energy Star, Federal energy management)
  - —More $ for low-income “home weatherization”
  - —Energy security (oil, supply infrastructure)
- **Energy Legislation**
  - —House + Senate bills now in conference; outcome uncertain
  - —Tax incentives for efficiency, renewables
  - —Utility provisions: restructuring, renewable “portfolio standard”

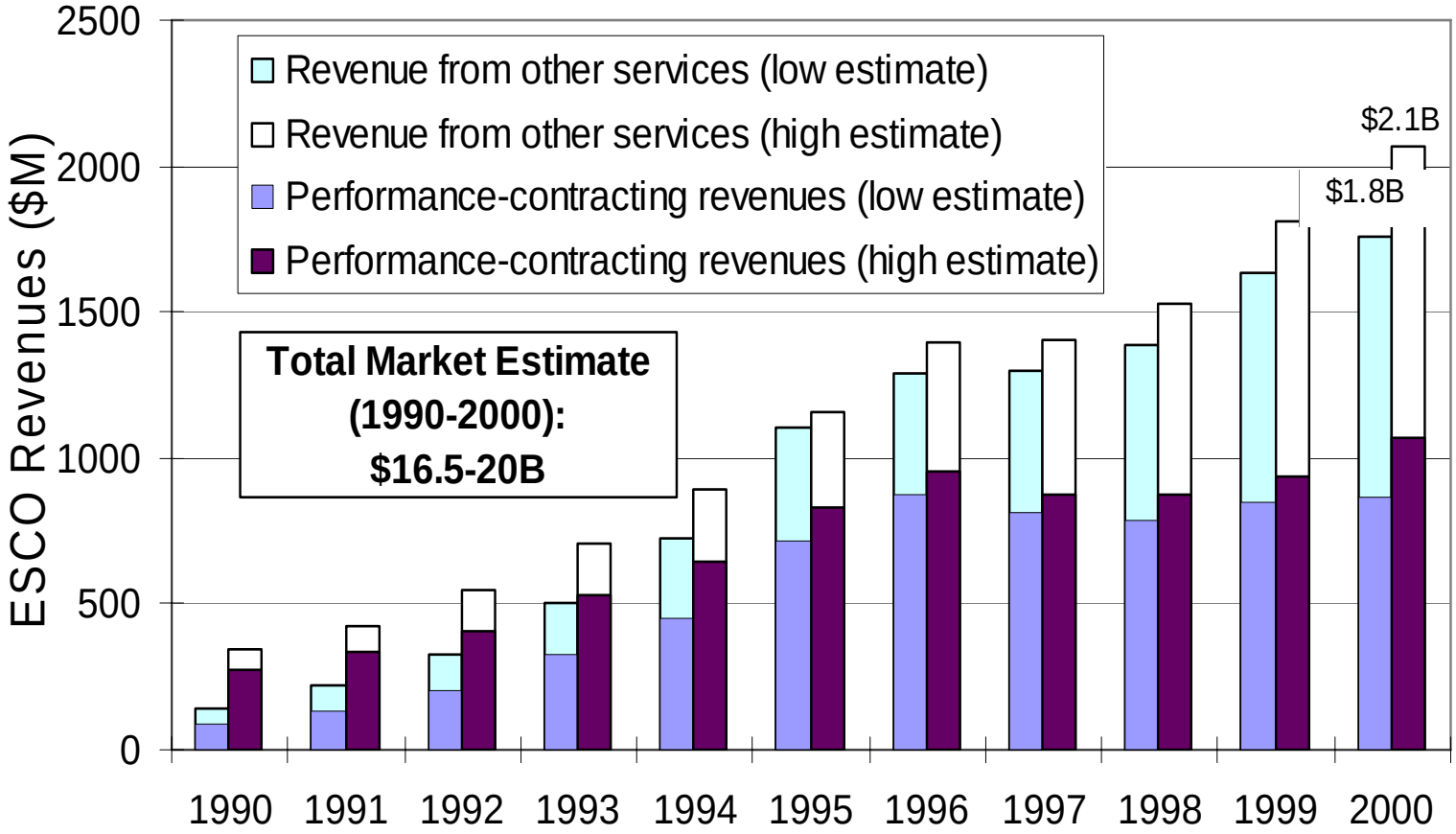
ENERGY POLICY (2)

- **DOE R&D: "Significant technology advances"**
  - —"Future car": hybrid → fuel cell (H2 economy)
  - —"Zero Net Energy" buildings
  - —Distributed energy resources
  - —Partner with states for R&D, tech. deployment
- **International energy efficiency policy: evolving**
  - —WSSD "Clean Energy Initiative"
    - Energy efficiency for sustainable develop.
    - Global village energy partnerships
    - Healthy homes and communities
  - —Bilateral agreements:
    - Greenhouse gas mitigation (Australia)
    - Sustainable develop. (So. Africa, China, India)
    - Energy markets (No. America Energy WG)

ENERGY POLICY (3)

- **"Outside the Beltway"**
  - —**ESCO sector growing – but still modest market share (~ $2 billion/year)**
  - —**Sustainable buildings (US Green Building Council "LEED")**
  - —**State initiatives**
    - **auto emissions standards for GG (Calif.)**
    - **region-specific appliance standards (Calif.)**
    - **green public buildings; tighter building codes**
    - **utility restructuring, "public benefits" funds**
  - —**Public awareness: varies by region + over time**

ESCO INDUSTRY GROWING, YET STILL A NICHE MARKET



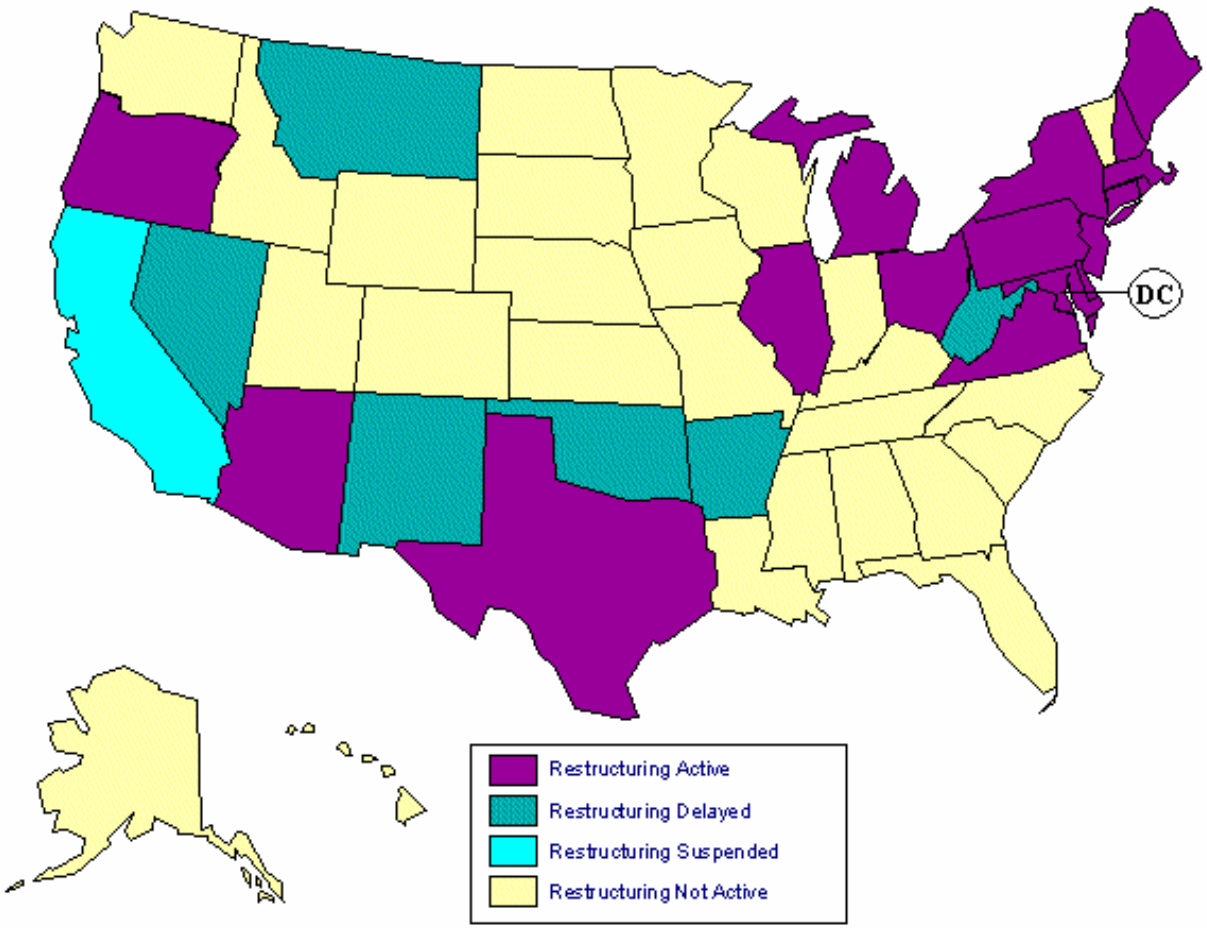
- **Energy Service Company (ESCO) market for energy-efficiency related services is ~$1.8-$2.1B in 2000; 24% annual growth rate (1990-2000)**
- **Performance contract revenues: $0.9-$1.0B in 2000**

Source: LBNL (Goldman)

UTILITY SECTOR

- **Wholesale competition: proceeding cautiously**
- **Retail competition: mainly larger customers**
  - **—residential customers may save ~$1-4/mo. (2-10%)**
- **DSM investments down more than 50%**
  - **—partly offset by "Public Benefits Charges"**
- **Competing demand-side objectives + strategy**
  - **—*market transformation*: "create permanent change, then exit"**
  - **—*resource acquisition*: "kWh now"**
  - **—*demand-response*: "kW <u>right now</u> !"**
- **Net metering + standard connection rules for DER, renewables**

RESTRUCTURING STATUS TODAY

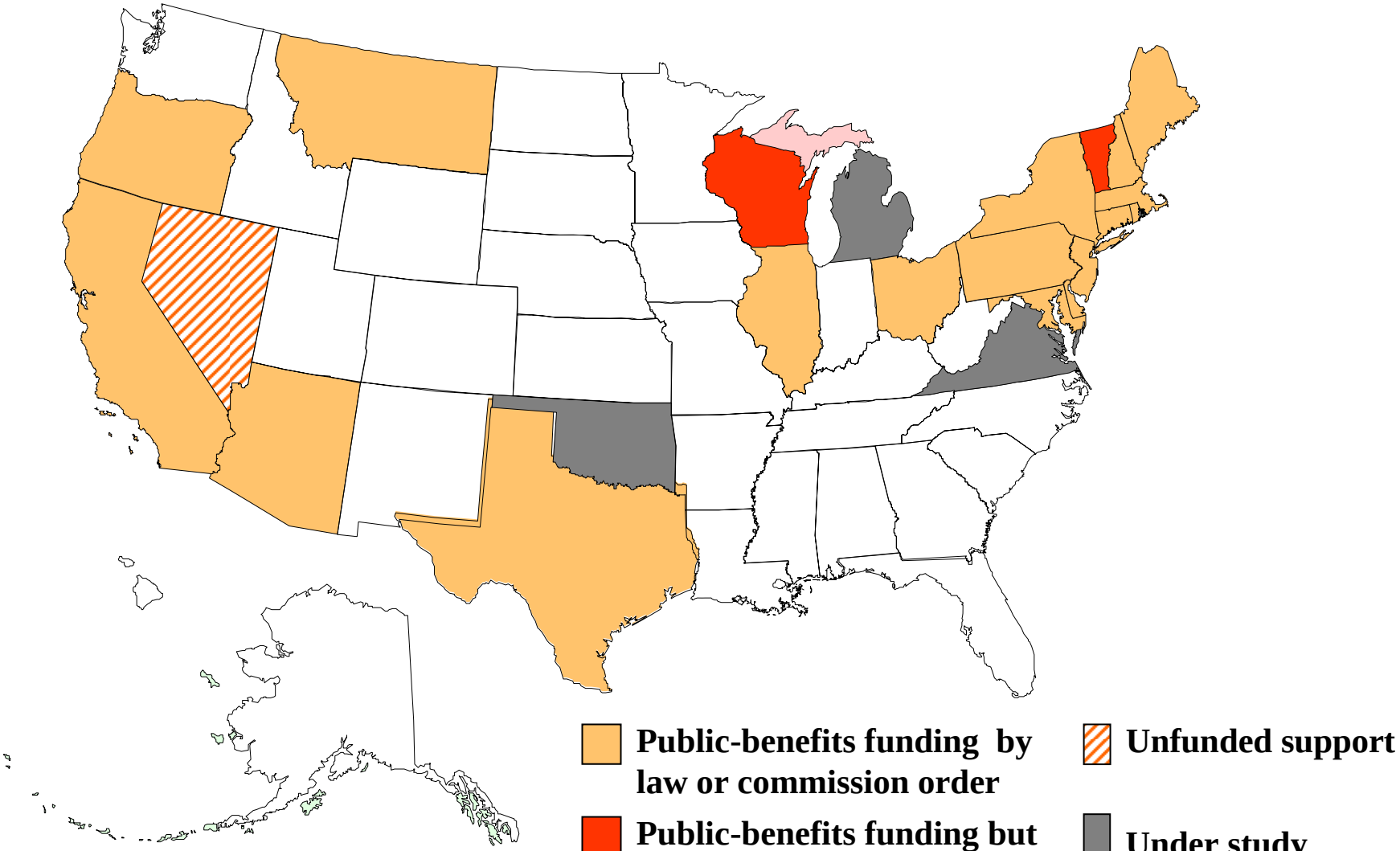


Source: DOE Energy Information Administration, 8/02

17 states and D.C. remain active – 7 states have *delayed* or *suspended* competition

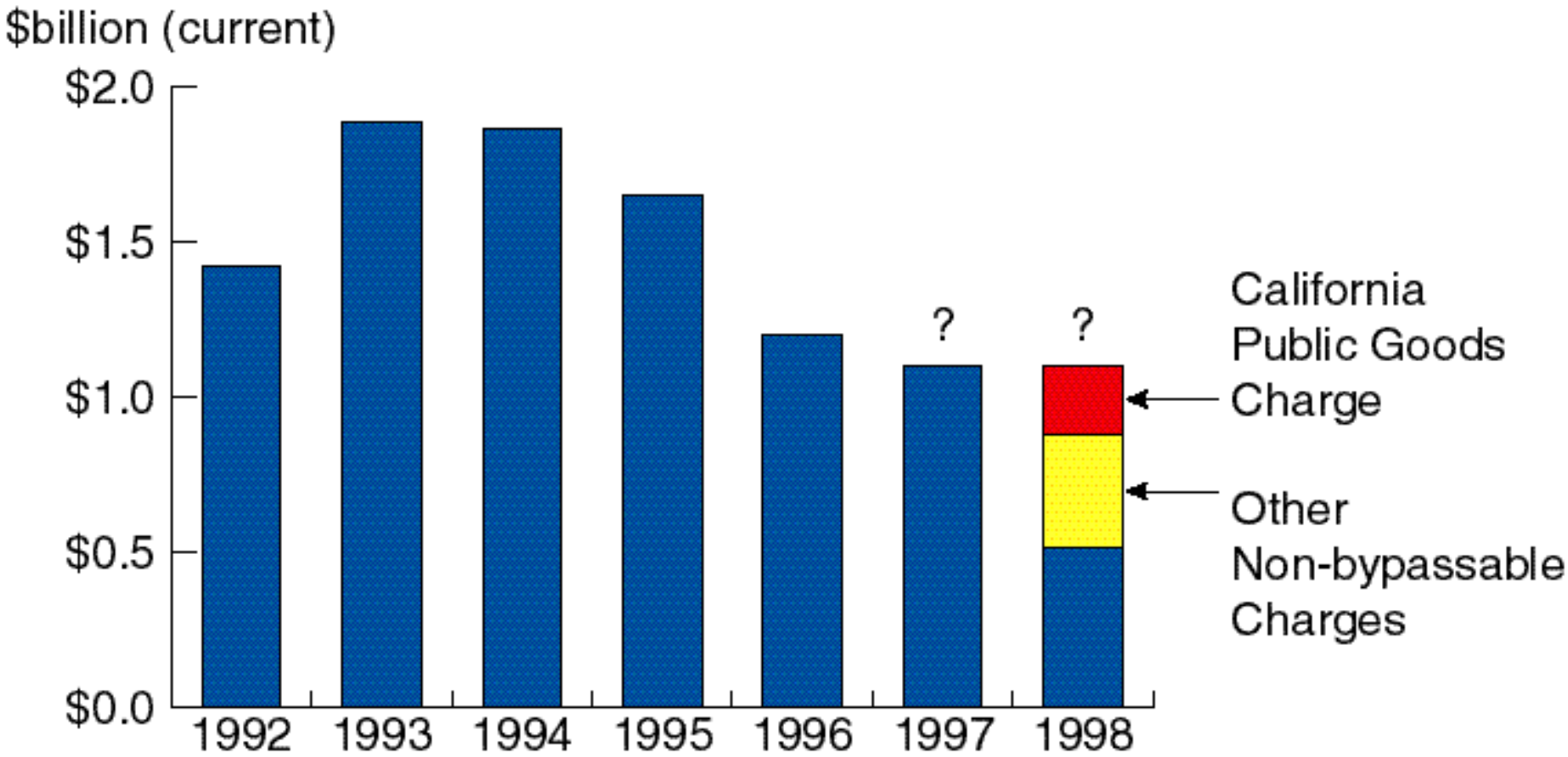
Purple: enabling legislation or regulatory order for retail access.
Teal: delays in implementing retail access.
Light Blue: Calif PUC suspended direct retail access.

STATE PUBLIC BENEFITS FUNDING FOR ENERGY EFFICIENCY



Source: ACEEE,, March 2001

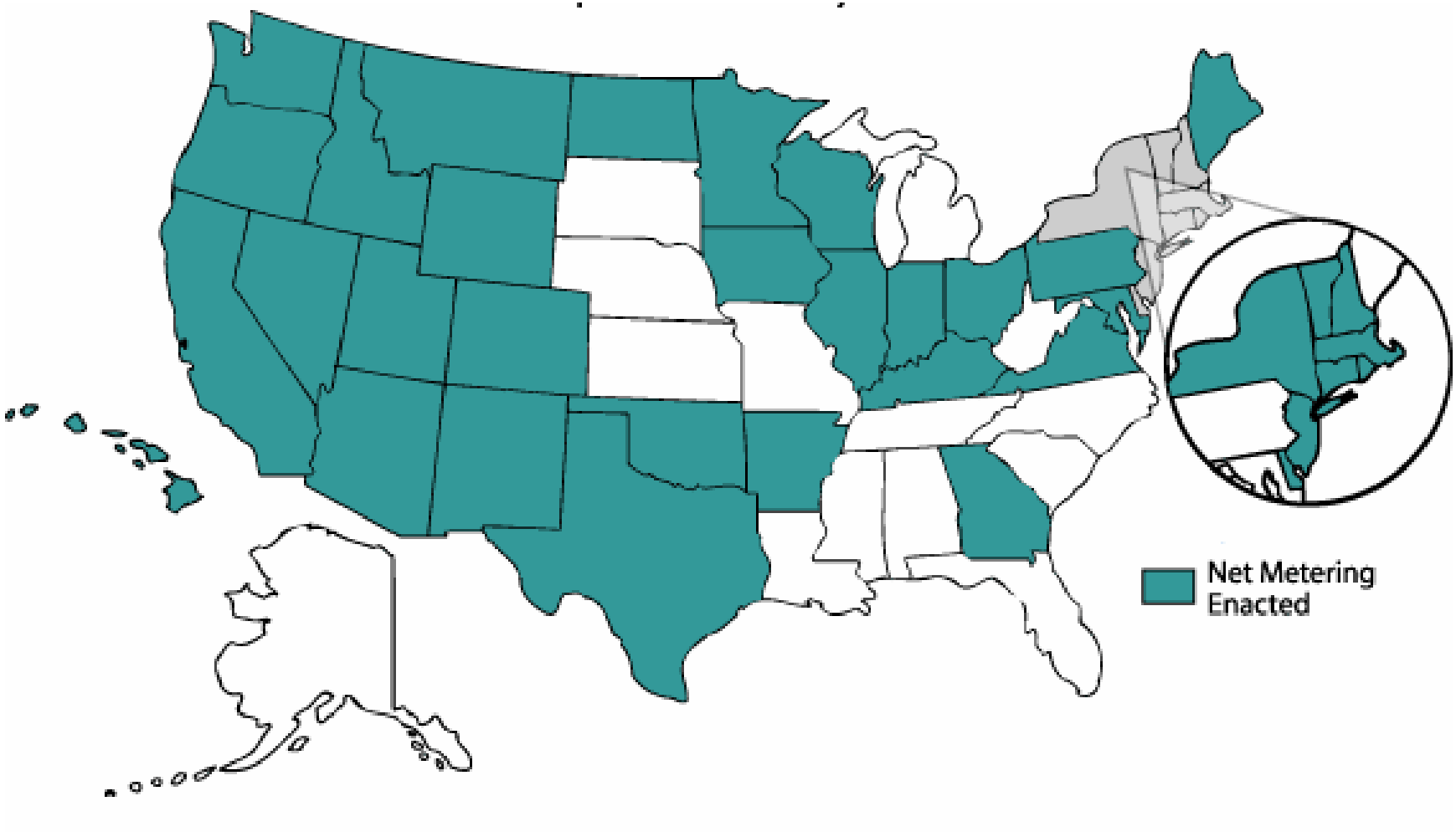
U.S. RATEPAYER SPENDING ON ENERGY EFFICIENCY



(14,400 MW of peak capacity avoided from 1989 to 1996)

Source: LBNL

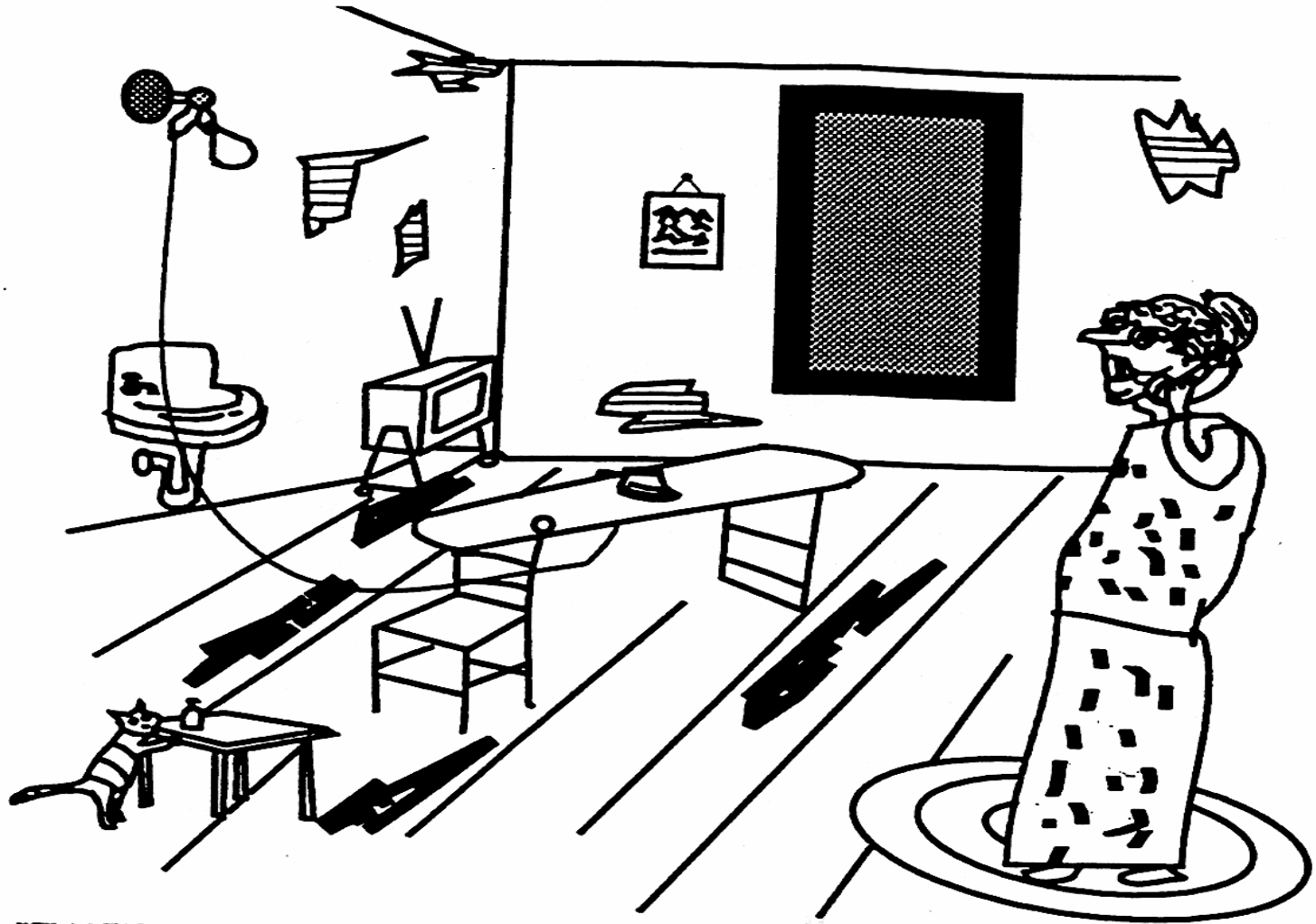
Net Metering



Source: DOE's Green Power Network, August 2002
http://www.eren.doe.gov/greenpower/netmetering/index.shtml#state

California Retail Customers Switching as of October 2000

	Resid.	Comm	Ind	Agric	Total
Customers	1.7%	7.5%	12.8%	2.5%	1.8%
Load	2.0%	16.1%	27.4%	6.9%	11.9%

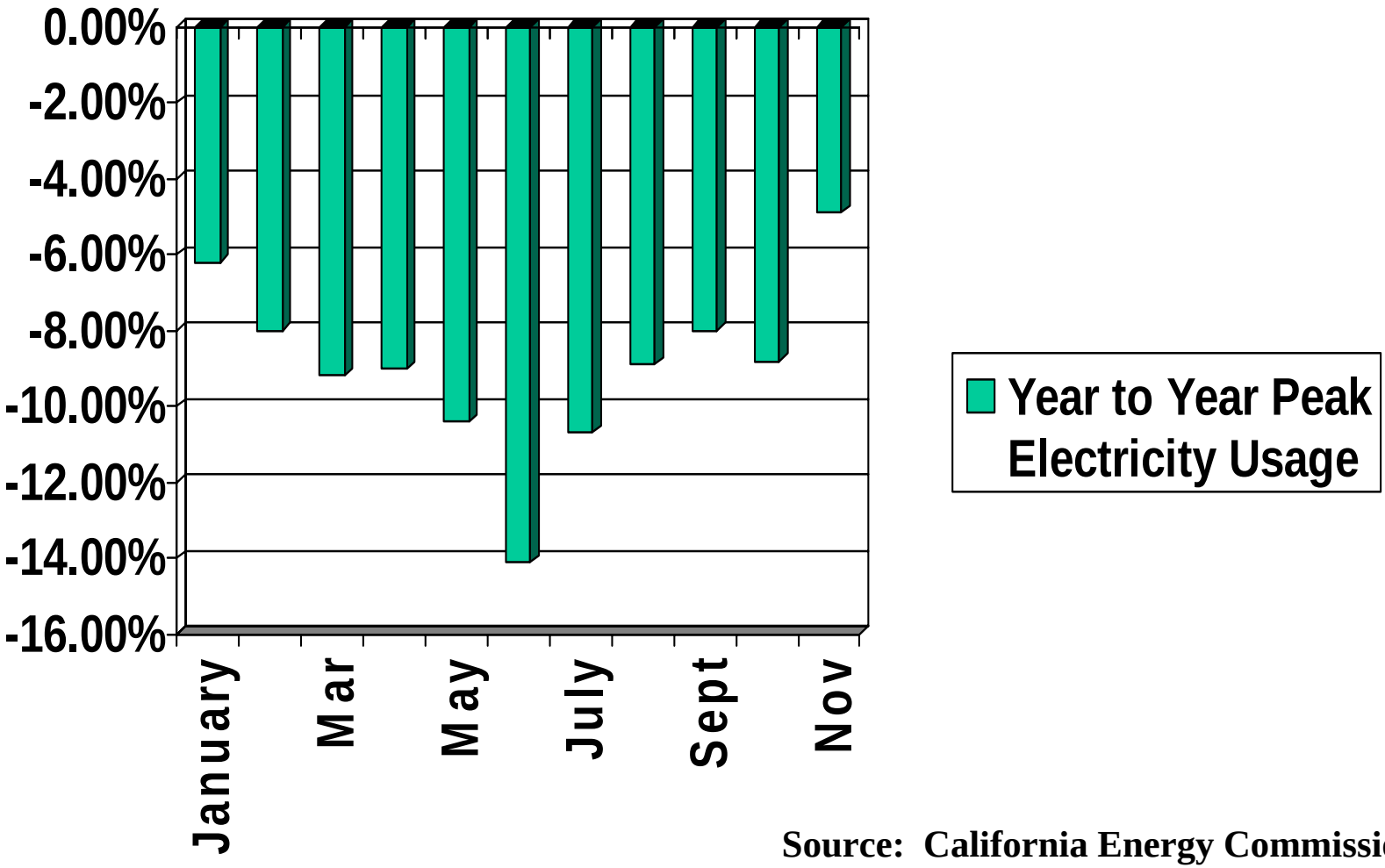


"THAT'S RIGHT, Sonny. Selling a Call Option. I am also going to need a physical package of 50 KW for 2 months, 50% tied to PJM offpeak and 50% tied to Henry Hub gas, to partly hedge my financial position and to partly run my appliances."

UTILITY SECTOR (2)

- **FERC interest in demand-response:**
  - —offset market power by suppliers
  - —improve grid stability (load-as-a-resource)
- **Demand-response [may have] saved Calif. from second year of shortages**
- **Calif. + NY: infrastructure investments for "D-R enabling technologies"**
  - —D-R audits
  - —interval meters and (real-time) data access
  - —demand-management automation
- **"Long-term portfolio management" urged by some former regulators**
  - —"least-cost planning" revisited?

California's Summer Peak Savings Results (2001 *vs* 2000)



Source: California Energy Commission

FUTURE PROSPECTS

Major US concerns:

1) Demand-as-resource

- **Demand-side bidding**
- **Enabling technologies: metering, services, consumer feedback (?)**

2) Grid reliability/security

3) Regional and state issues:

- **transmission planning and pricing**
- **tax implications of utility restructuring**

4) Distributed energy generation (DER)

OPPORTUNITY AREAS

1) Near-term:

- **Customer response to (dynamic) pricing**
  - — do customers understand price signals? (today's bills vs RTP)
  - — response to D-R: short-term *vs* long-term; large *vs* small customers
  - — importance of "enabling" technologies + services
- **Public Sector Leadership:**
  - — procurement (market leadership),
  - — public buildings
  - — water + other infrastructure (systems efficiency, as a D-R resource)
- **"Best-Practice" Benchmarking (build on INDEEP: not just descriptive but *prescriptive*)**
  - — buildings, products, processes
  - — policies and practices (M&V, risk mgmt., pgm. evaluation)
  - — metering, billing, pricing
- **Efficiency labels (+ testing, standards?): CLASP, APEC-ESIS**

2) Longer term:

- **Developing & Transition Countries:**
  - — technical assistance, training, technology
- **Human capital: invest in education, training**
  - — "feedback" to today's consumers *vs* "feed-forward" to tomorrow's

NEW NAME FOR DSM AGREEMENT?

1) “Energy Demand Management”

– includes fuel + elec., eliminates “DSM”

2) “Energy Demand and Systems Management” (EDSM)

– adds “system mgmt” and allows DER