



Complementary Roles of State and Federal Agencies in Energy Technology RD&D

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**Terry Surles
California Energy Commission**



“Everyone is not entitled to an opinion. If they lack knowledge, they do not deserve to have an opinion.”



Sir Winston
Churchill



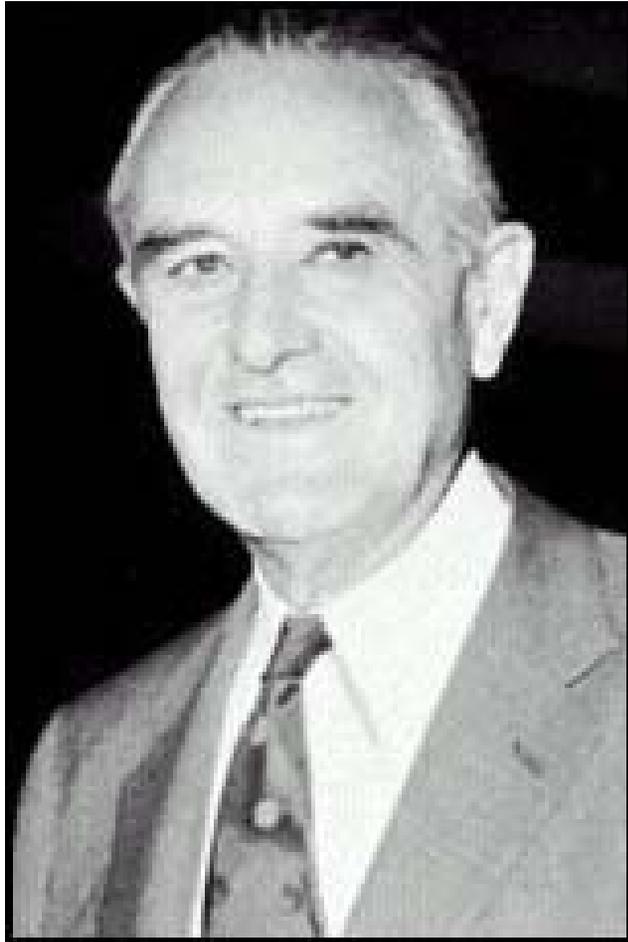
“Everybody wants to get into da act!”



Jimmy Durante



When asked how the negotiations were going, he responded...



**“About as distastefully
as anticipated”**

W. Averell Harriman



California Must be Prepared to Face the Same Issues as Others



* **Economics**

- ◆ Resource Availability
- ◆ New technology market penetration
- ◆ Lifecycle analysis
- ◆ State/Federal laws

* **Environment**

- ◆ Impact of new technologies
- ◆ Climate change
- ◆ Sustainable practices

* **Security**

- ◆ Peak demand/demand response
- ◆ Infrastructure interdependencies



Energy Costs Fundamentally Affect our Overall Economy



State-Based Programs

- ★ Term limits (or the future is now)
- ★ Lack of culture/experience (stronger understanding of data collection, regulatory development)
- ★ State civil service requirements (ARRRGGHHH!!!)
- ★ Contractual orthogonality (specificity vs R&D flexibility)
- ★ Lack of intellectual critical mass
- ★ Funding limitations



Opportunities

STATES

- Closer to the marketplace/consumers - link to D&D
- At times, more nimble than the USG
- Better linkage between policy and R&D
- A better focus for addressing needs

FEDERAL GOVERNMENT

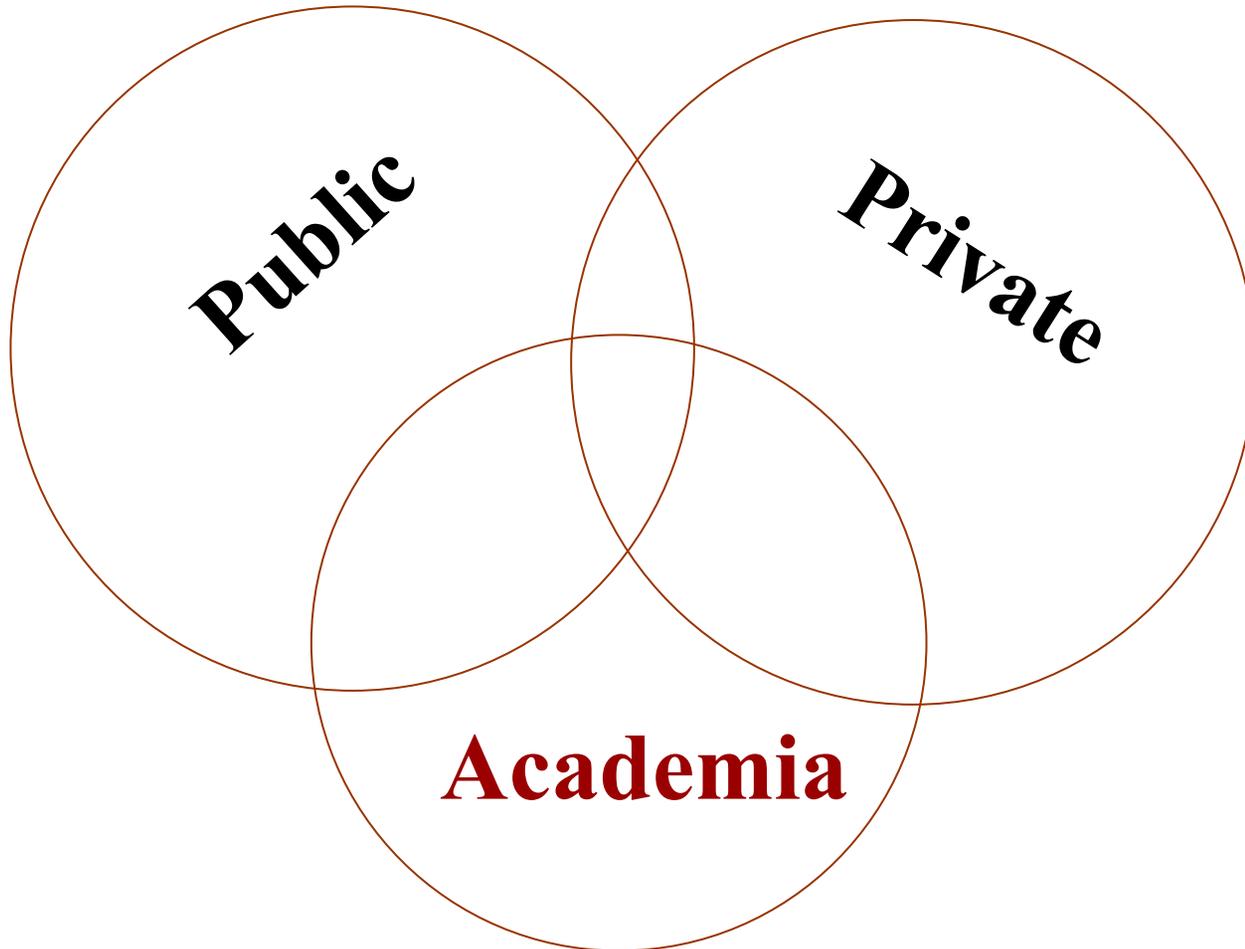
- Culture in place for understanding the role of R&D
- Able to take the long view - no term limits
- More funds (beware of earmarks)
- Able to fund more basic R&D

NATIONAL LABORATORIES

- Excellent capabilities
- Able to merge additional talent across sectors
- Global, longer-term view

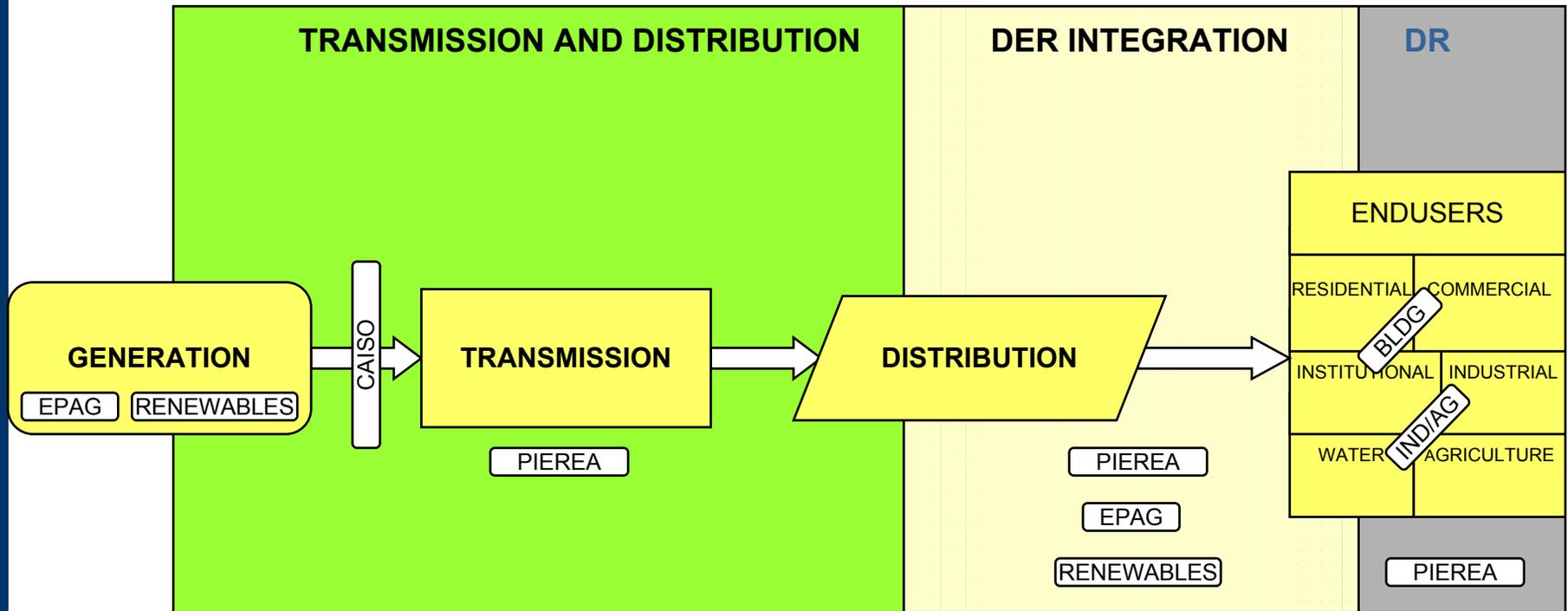


National Laboratories Can Be Used to Integrate Between Federal (R&D) and States (D&D)





CEC's Systems Perspective Provides Crosscutting Coverage To Complement Other Programs





Policy and RDD&D Must Be Linked in Order to Provide Benefits to the State

Benefits to State and Citizens





RDD&D Activities Should Connect with Synergistic Government Regulatory, Incentive, and Subsidy Programs

- ★ **Buildings** - Titles 20 and 24
- ★ **Renewables** - Renewable portfolio standard (RPS)
- ★ **Environmentally-Preferred Advanced Generation** – 2007 ARB rules on distributed generation emissions
- ★ **Energy Systems Integration** - CPUC/CEC initiatives in demand response/dynamic pricing, distributed energy resources, and transmission and distribution systems
- ★ **Storage** - Linked to RPS, DER, T&D, CIP Issues



Our Success is Dependant on the Successes of Our Technology Partnerships

- ★ **Universities** – UCOP standard contract
- ★ **Industries** – funding, obtaining co-funding, pushing deployment
- ★ **Federal** – Departments of Energy, Commerce, Agriculture
- ★ **National Laboratories** – LBNL, NREL, LLNL, ORNL, NETL, SNL, ANL
- ★ **State** – ARB, CDF, DWR, DOGGR, CFA, CPA, CPUC, DGS



There are a Number of Success Stories for CEC and DOE Interaction



- * Berkeley Lamp, the other lighting technology - LBNL
- * Decision analysis for planning - ANL
- * Cool roofs - LBNL/ORNL
- * Wind/Biomass - NREL
- * CERTS - LBNL, SNL
- * Technical reviews - NREL, ANL, BNL, PNNL

On-going or New

- * Numerous demand-side programs - LBNL
- * Numerous DER programs - NREL
- * Successful responses to RFPs - LLNL, ANL
- * Ramgen - NETL
- * Regional sequestration center - NETL, LBNL, LLNL



The New DOE Initiative on Regional Carbon Sequestration is an Example of Federal/State/Lab/Industry/NGO Interaction



- ★ States: CA, OR, WA, NV, AZ, AK
- ★ Labs: LLNL, LBNL, NETL
- ★ Industry: BP, Shell, Kinder-Morgan,
- ★ Consultants: EPRI, ARI, Nexant, SFA Pacific,
- ★ Public outreach: Science Systems, San Francisco, NRDC, Universities



The Energy Storage RFP is an Example of A Good DOE/CEC Combined Effort

- ★ Process is bumping along - seven proposals received
- ★ Builds upon past DOE R&D funding
- ★ Links to our new CA law for market transformation activities - proving the “Value Proposition”
- ★ Sandia and Distributed Utility Associates critical to the success



PIER is Attempting to Bridge the Valley of Death: Incubators, SB 1038



New Energy Idea

Proof of Concept

Technology Development

Demonstrations

Valley of Death

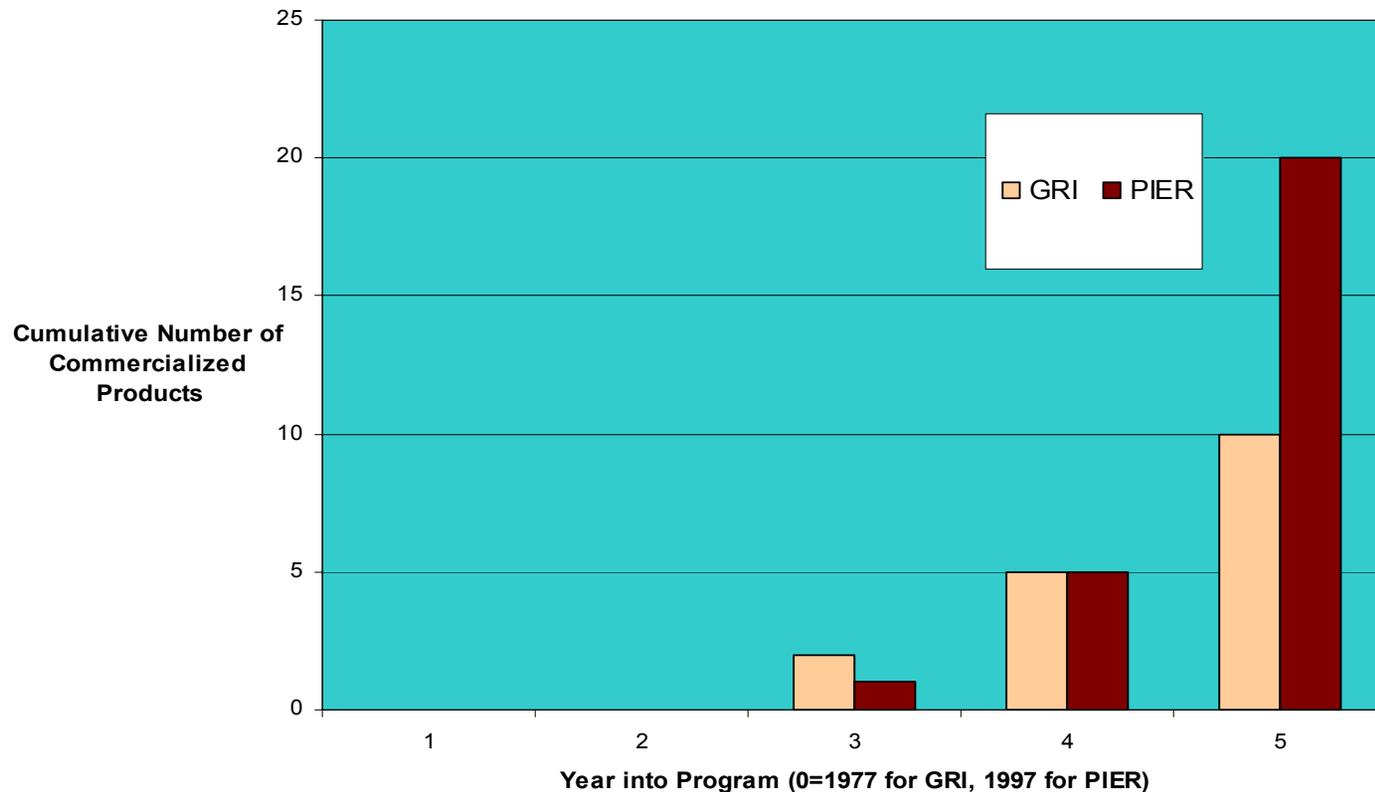
Self Sustaining Market

International Market





Conservative Public Benefit Analysis Shows that Early Current Return on Investment is Between \$2 and \$5 Per Dollar Spent



This analysis does not estimate intrinsic public benefits arising from reduced energy use and an improved environment.



CEC/PIER is Already Providing a Stream of Products Consistent with the California Energy Action Plan (CEAP)



CEAP Goal

PIER Issue

Products

**Optimize efficiency,
Reduce demand**

**Reduce per capita
energy use**



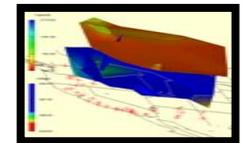
**Ensure power
supply meet RPS**

Meet RPS



**Upgrade T&D
structure**

**T&D System must be
reliable and congestion-
free**



Promote DG

**Peak demand reduction
Low emissions DG
Reliable, affordable DG**



**Ensure reliable
supply of NG**

Meet marketplace needs





The Future: Are We Having Fun Yet



- ★ Continual budget pressure on R&D
- ★ Relatively weak political constituency
- ★ A track record of tangible market successes is mandatory
- ★ Continued need to re-sell program in term-limited environment
- ★ Collaborations with the Federal Government can be extremely useful
- ★ Strong linkage between state policies and R&D enhance chances of success



CEC Will Continue to Develop Programs Complementary to DOE Activities



- **CERTs** – Microgrids and transmission has complement between fundamental and application R&D
- **DUIT** – Tag team approach on Grid Effects of DER phases R&D
- **NREL** – Collaborative on Interconnection, Grid Effects and Market Integration
- **Energy Storage** – Support beyond value proposition solicitation
- **Distributed Generation** – Standardized evaluation and testing (with ASERTTI)
- **Distributed Technologies** – Wind, microturbines, ARICE, biomass
- **Joint Planning with DOE/OTDS**



Driving to a Sustainable Future: The “E”s are Linked



- ★ **Environment**
- ★ **Energy**
- ★ **Economics**
- ★ **Equity**
- ★ **Education**

