

Rapid Scale-Up of Energy Efficiency: Lessons Learned From  
Around The World

## **The California Crisis Experience**

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## **Overview of Today’s Discussion**

- ◆ **EE/DSM Response To Two Different Situations**
  - 2000 – 2001: A Crisis Reaction
  - Summer 2005: A Proactive Plan
- ◆ **SCE’s Energy Efficiency Response**
- ◆ **Results**
- ◆ **Lessons Learned/Conclusions**



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## The 2000-2001 Energy Crisis EE/DSM Response Background

- ◆ A Massive, Multi-Faceted Statewide Response
  - Started In Early Summer 2000 To Address Shortages Resulting From Disfunctional Restructured Market
  - Ramped Up Over The Next 12-18 Months
    - State Legislative Initiatives Increased EE, Load Management, and Distributed Generation Funding
      - SBx1-5, AB 970, 20-20 Customer Rebate Program
    - CAISO Load Management Programs
    - Utility EE Summer Initiatives and DR Programs



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## The 2000-2001 Energy Crisis EE/DSM Response SCE's Energy Efficiency Programs

- ◆ Regular EE Program Offerings Promoted/Modified To Emphasize Immediate Peak Demand Reductions
  - Promotions increased to take advantage of unprecedented customer awareness (prices, supply availability, possibility of outages, restructuring problems)
  - Residential
    - Rebates Applications Increased From 50,000 to 200,000
    - CFL Market Share Increased From .6% to 8.5%
  - Non Residential
    - Standard Performance Contract
      - Peak demand reduction payment added
      - Bonuses offered for installation prior to Summer 2001



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## The 2000-2001 Energy Crisis EE/DSM Response SCE's Energy Efficiency Programs

- ◆ Special Summer Initiative Programs Created
  - Swimming Pool Pump Controls and Replacements
  - Refrigerator Recycling
  - LED Traffic Signal Incentives
  - Residential Hard To Reach (Multifamily/Mobile Home Contractor Standard Offer)
  - Campus Energy Efficiency Initiative (UC and CSU)
  - Beat The Heat (Torchiere Exchange)
  - California Oil Producers Electric Cooperative
  - Third Party Initiatives
    - First generation third-party EE program implementation bid
    - Currently on the fifth generation of third-party bids
      - SCE's 2006-2008 IDEEA/INDEE/Targeted Solicitations



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## The 2000-2001 Energy Crisis EE/DSM Response Results – SCE Energy Efficiency Programs

|                                     |                 |        |               |
|-------------------------------------|-----------------|--------|---------------|
| 00/01 Regular EE Programs           | 919 million kWh | 206 MW |               |
| 00/01 Summer Initiative EE Programs | 107 million kWh | 69 MW  |               |
| Total                               | 1.2 billion kWh | 375 MW | \$230 million |



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## The 2000-2001 Energy Crisis EE/DSM Response Results – Statewide EE/Load Mgmt/Self Generation

### ◆ It Worked!

- Summer 2000 – Utility Load Management Programs Provide Significant Reliability Benefits, Helping To Avert Rotating Outages On Several Occasions
- By Summer 2001 All Of The Programs Were Working, and Provided 4,200 MW Of Load Reduction
  - Between 50 and 160 hours of Stage 3 Emergencies (and rolling blackouts) were potentially avoided
  - 374 MW is estimated to be a result of energy efficiency load reductions in Summer 2001, plus another 600 MW ultimately installed under 2000/2001 programs that will be sustained for the economic life of the measures



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Source: Goldman, Eto, and Barbose. (2002) "California Customer Load Reductions During The Electricity Crisis: Did They Help To Keep The Lights On?" LBNL-49733.

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## SCE's Summer 2005 EE Initiative Background

- ◆ Dec 2004 – California agencies concluded that resources in Southern California could be tight under extreme weather and operating conditions in the summer of 2005
- ◆ SCE's analysis concluded that up to 540 MW of additional resources may be needed in SCE and SDG&E service territories (under above extreme conditions)
- ◆ With only a short time until summer, additional resource options to meet this need were limited.
  - SCE identified options that could meet the estimated needs but required varying levels of utility and state support to implement
- ◆ Actions taken by SCE to meet this shortage were predominately met through expanded demand side management
 

|   |               |
|---|---------------|
| ▪ Expanded Existing DSM Portfolio                 | 383 MW        |
| ▪ Contracted For Mothballed Generating Facilities | <u>175 MW</u> |
|   | 558 MW        |



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## SCE's Summer 2005 EE Initiative The DSM Plan

- ◆ Energy Efficiency 48 MW
  - Standard Performance Contract Lighting Initiative
  - Small Business Lighting Sweep
  - Residential Appliance Recycling
  - Residential Rebates
- ◆ Integrated EE/DR 150 MW
  - 20/20 (Res and Non Res)
- ◆ DR Reliability 185 MW
  - AC Cycling ("Summer Discount Plan")
  - MWD Pump Load Curtailment

**383 MW**



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## SCE's Summer 2005 EE Initiative Energy Efficiency Programs

- ◆ Standard Performance Contract Lighting Initiative
  - Builds on the successful current SPC program process and delivery channels
  - Offers \$750 per peak kW demand reduction, plus existing \$.05/kWh saved (first year savings)
    - Avg demand reduction, noon to 6 pm, summer season
    - Brings to bear the entire lighting/energy services market on late adopters
  - Opened May 5, Installations Must Be Complete (operational) by Aug 31
  - Budget/Goal: \$30 million/17.95 MW/100 million kWh



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## SCE's Summer 2005 EE Initiative Energy Efficiency Programs

### ◆ Small Business Lighting Sweep

- Builds on SCE's current Small Biz/CBO Lighting Program
- Lighting installation firms under contract to SCE perform lighting retrofits in very small businesses at no cost to customer
  - Simple, quick, very low administrative cost (minimal recruitment/sales time)
- Started May 5, Installations Completed Aug 31
- Budget/Goal: \$10 million/7.3 MW/34.9 million kWh



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## SCE's Summer 2005 EE Initiative Energy Efficiency Programs

### ◆ Refrigerator Recycling

- Builds on SCE's current appliance recycling program
- Increases customer incentive from \$35 to \$50
- Waives current age restriction, enabling early retirement of post 1990 refers
- Increased promotion
- Budget/Goal: \$4 million/3.1 MW/18.3 million kWh



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## SCE's Summer 2005 EE Initiative Energy Efficiency Programs

- ◆ Residential EE Rebates
  - Builds on SCE's current Res Rebate Program
  - Expands point-of-sale instant rebates with appliance retailers
    - Refrigerators, Room Air Conditioners, Whole House Fans, Pool Pumps
  - Central Air Conditioners
  - Budget/Goals: \$13 million/18.7 MW/21.9 million kWh



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## SCE's Summer 2005 EE Initiative Energy Efficiency Programs- Results As Of August 31

| Program                                | MW           | kWh, millions | \$, million   |
|--|--------------|---------------|---|
| SPC SI                                 | 23           | 120           |   |
| Small Biz SI                           | 7            | 34.9          |   |
| Ref Recycling                          | 3.2          | 18.3          |   |
| Res Rebates                            | 10.2         | 9.5           |   |
| <b>Total SI</b>                        | <b>43.5</b>  | <b>182</b>    | <b>57</b>   |
| <b>Total Regular 04-05 EE Programs</b> | <b>289</b>   | <b>1,642</b>  | <b>223</b><br>(excludes non-resource program costs) |
| <b>Grand Total</b>                     | <b>332.5</b> | <b>1,824</b>  |   |



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## SCE's Summer 2005 EE Initiative Energy Efficiency Programs- Results As Of August 31

### ◆ Other Interesting Program Statistics

- Standard Performance Contract Summer Initiative
  - 634 projects
  - 60% medium sized customers (under 500 kW demand)
  - 60% contractor/ESCO sponsored
  - Additional 4.6 MW, 22 GWh from non-lighting measures (comprehensive projects)
- Small Biz Lighting Sweep
  - 4,600 small businesses served
  - Mostly T12/magnetic ballasts to T8/electronic
- Refrigerator Recycling
  - 26,000 units retired/recycled (23,000 refers, 3,000 freezers)
- Residential EE Rebates
  - 14,000 Room AC units
  - 9,100 Energy Star Refrigerators
  - 6,000 Central AC Systems



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## SCE's Summer 2005 EE Initiative Energy Efficiency Programs- Conclusions/Lessons Learned

- ◆ DSM Resources Take Time To Develop and Deploy, But Can Be A Significant Part Of A Resource Portfolio
  - EE Is A Long Term Proposition With Harvestable Immediate Incremental Impacts At Times Of Need (But Not Too Often!)
  - EE Programs In California Were Maintained At A Significant Level By Forward Looking Policy During The Restructuring Era Thus Could Be Relatively Easily Scaled Up To Meet Short Term Resource Needs
- ◆ A Robust EE Provider Market Is Essential To Success Of A Large Scale DSM Resource Procurement Strategy – Especially For Quick Results
- ◆ DSM Resources Can Be Acquired Cost-Effectively From All Customer Sectors
  - Good Program Design Addresses All Potential Sources of Savings



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