

LEEDERS

Leadership in Energy Efficiency, Demand
and Environmental Resource Solutions

USEA/SARI Energy Markets Executive Peer Exchange

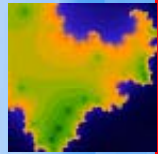
Jim Parks, Project Manager

July 31, 2006



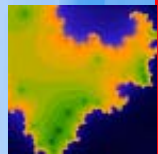
LEEDERS Core Mission

To propose a new long-term strategy for the aggressive integration of demand-side opportunities in district resource investment and operations.



Events To Date

- ◆ Amory Lovins presentation August
- ◆ David Goldstein September
- ◆ Visioning session October
- ◆ LEEDERS team kick-off January
- ◆ As-Is report March
- ◆ Steering Committee meetings Multiple
- ◆ Final Recommendations April/May

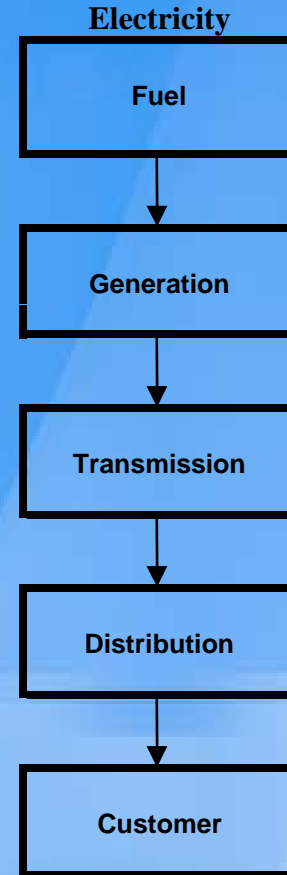
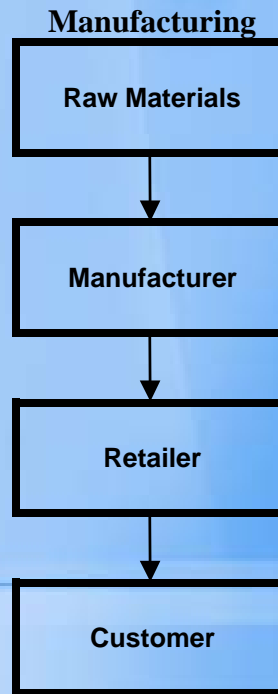
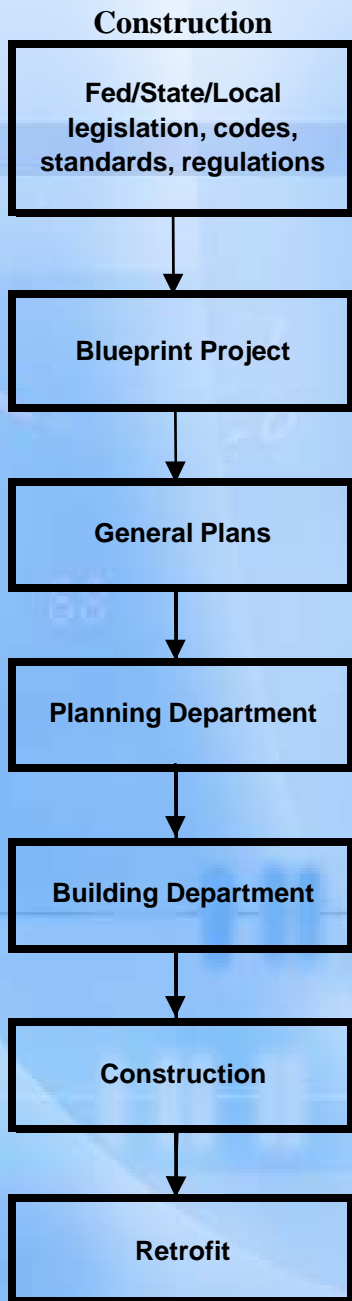
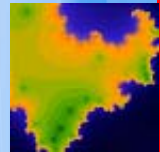




Process

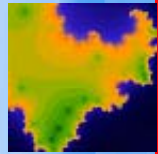
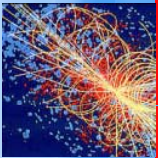
- ◆ Developed 6 high level goals with supporting objectives.
- ◆ The objectives became research topics which were discussed with the Steering Committee.
- ◆ Teams wrote up the research objectives in a standard format—
 - ❖ Findings
 - ❖ Conclusions
 - ❖ Recommendations
 - ❖ Explanation and Rationale

Opportunities to impact efficiency



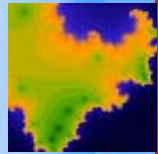
Leadership

- ◆ The recommendations are a result of best practices, research, subject matter expertise, and analysis of applicability and benefits to SMUD.
- ◆ The recommendations collectively represent significant leadership.
- ◆ Significant focus on customer/community compact and peak load reduction.
- ◆ Significant focus on Board outcomes.



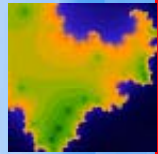
Goal 1

SMUD demonstrates energy and environmental leadership by example.



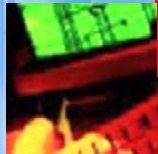
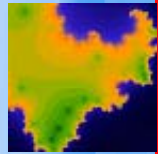
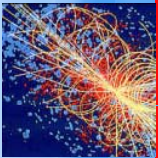
Goal 1 Suggested Actions

- ◆ Enhance the culture within SMUD that promotes energy efficiency and environmental stewardship as part of corporate philosophy.
- ◆ Be a community leader in procuring energy-efficient and environmentally-preferred equipment, materials, and services.
- ◆ Prepare current and future workforce to be leaders in energy efficiency, renewables, and environmental issues.



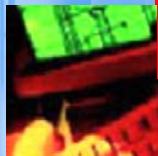
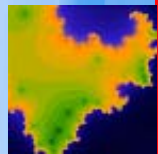
Goal 2

The highest levels of cost-effective energy efficiency are achieved along the entire fuel cycle: i) at every point at which SMUD obtains, processes, generates, and delivers energy; and, ii) at the customer end use.



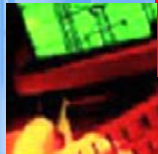
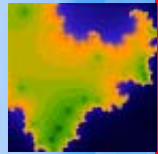
Goal 2 Suggested Actions

- ◆ Consider modifying Core Value SD-7(c) to explicitly require that SMUD incorporate the highest-efficiency equipment that is technically feasible, reliable in-service, and cost-effective in all transmission, distribution, and power-plant generation projects.
 - ❖ Establish metrics to measure progress.



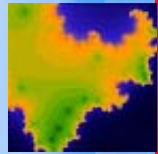
Goal 3

Resource planning process is more transparent and results in balanced portfolio decisions where demand side measures are compared on a comparable basis to supply side options.



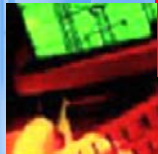
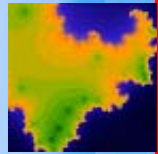
Goal 3 Suggested Actions

- ◆ Modify internal process to make it more transparent and involve internal stakeholders.
- ◆ Propose that Key Value SD-9(e) be modified to more closely reflect wording of SB 1037 that states:
 - ❖ Each local publicly owned electric utility, in procuring energy, shall first acquire all available energy efficiency and demand reduction resources that are cost effective, reliable, and feasible.



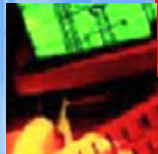
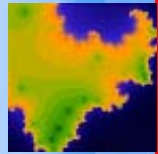
Goal 3 Suggested Actions

- ◆ Include in resource comparisons/decisions an explicit proxy for the financial risk of potential future regulation (control) on mercury and greenhouse gas emissions.

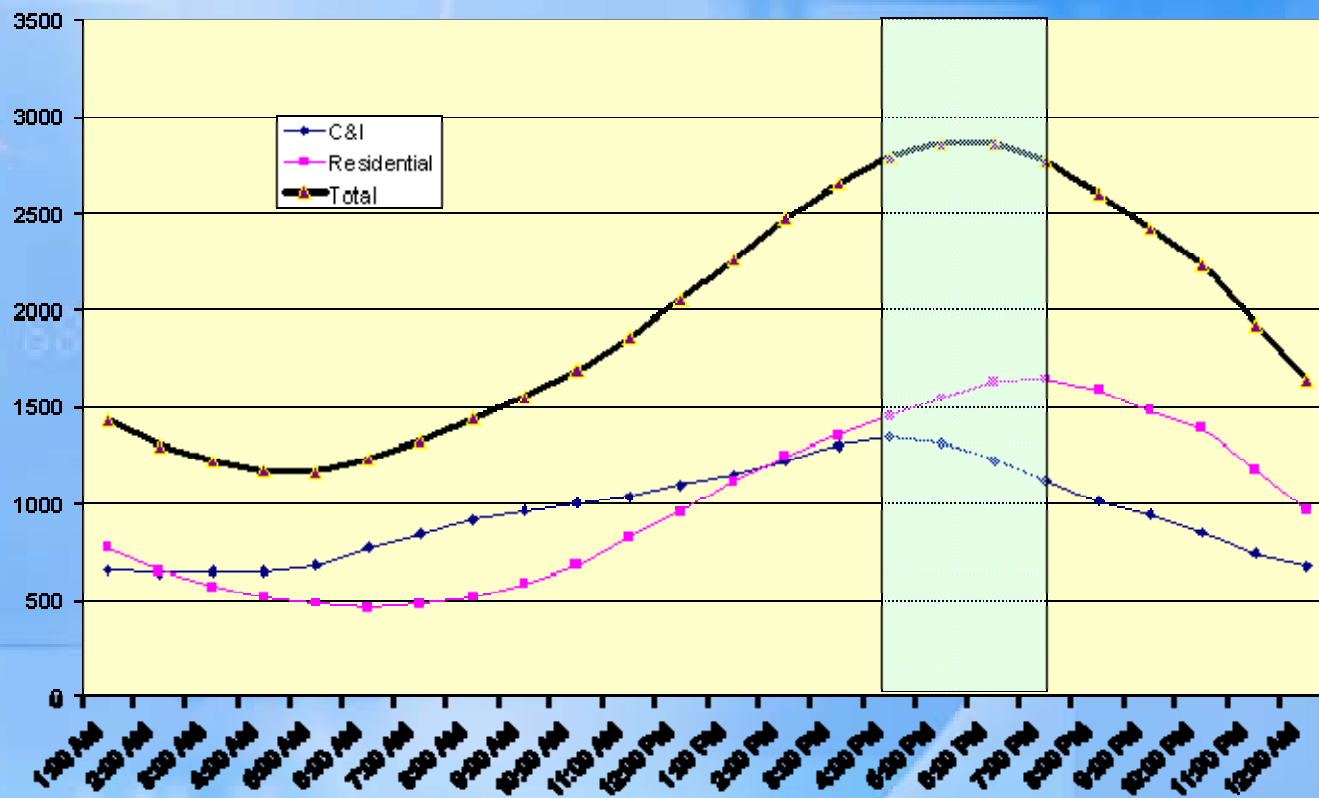
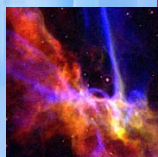
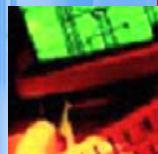
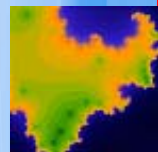


Goal 4

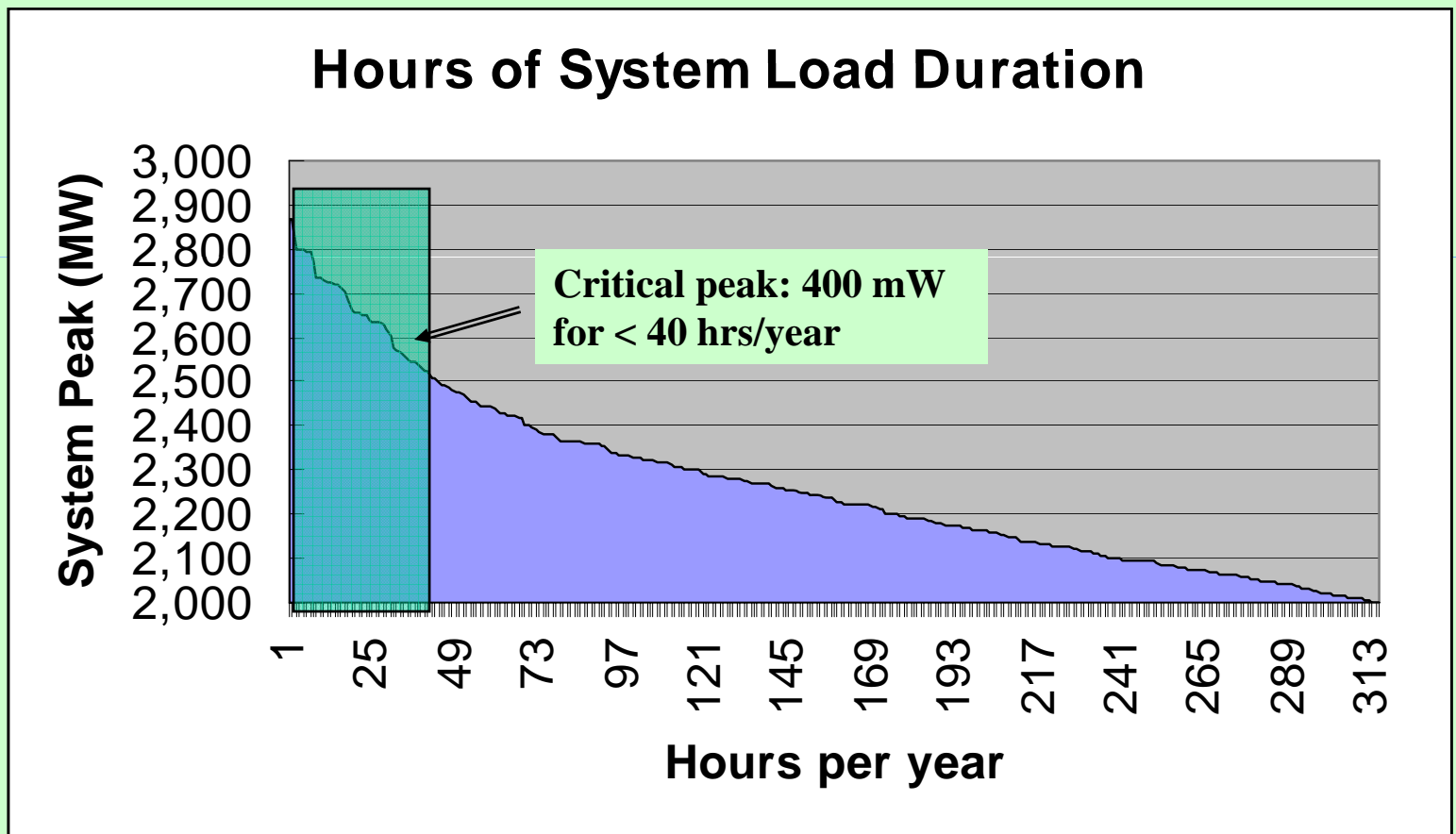
Price signals are set to optimize efficiency and resource utilization.



Load Profile

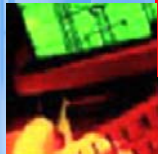
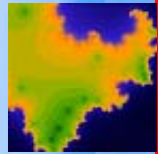
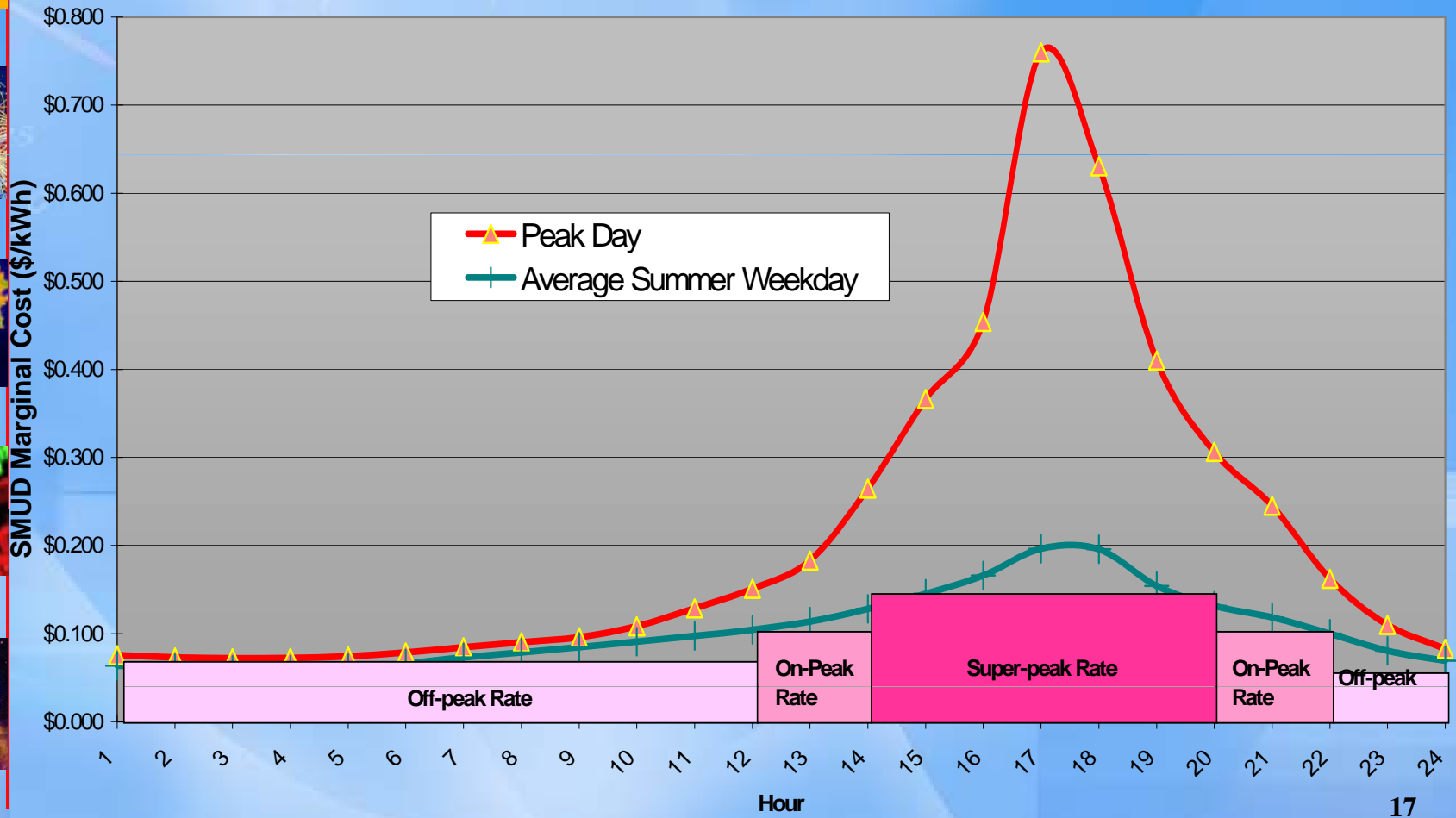


Load Duration Curve



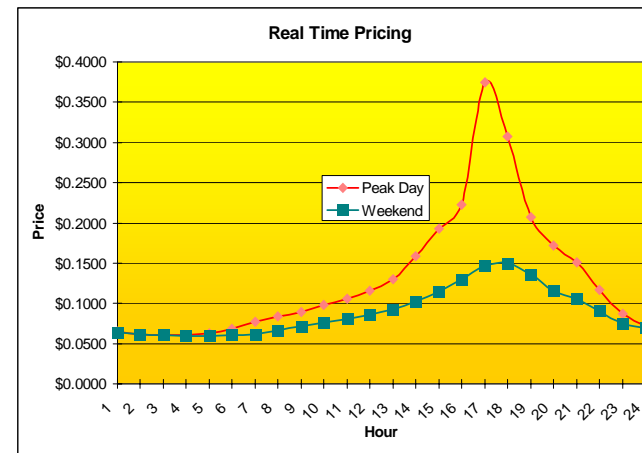
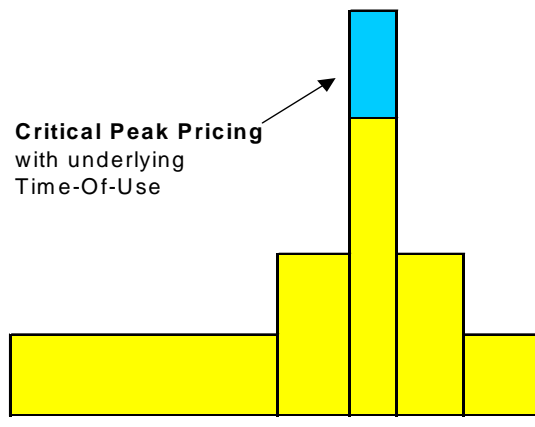
TOU Rates Compared to Peak Profile

**TOU Rates Approximate Average Summer Costs,
But Not Critical Peak Days**

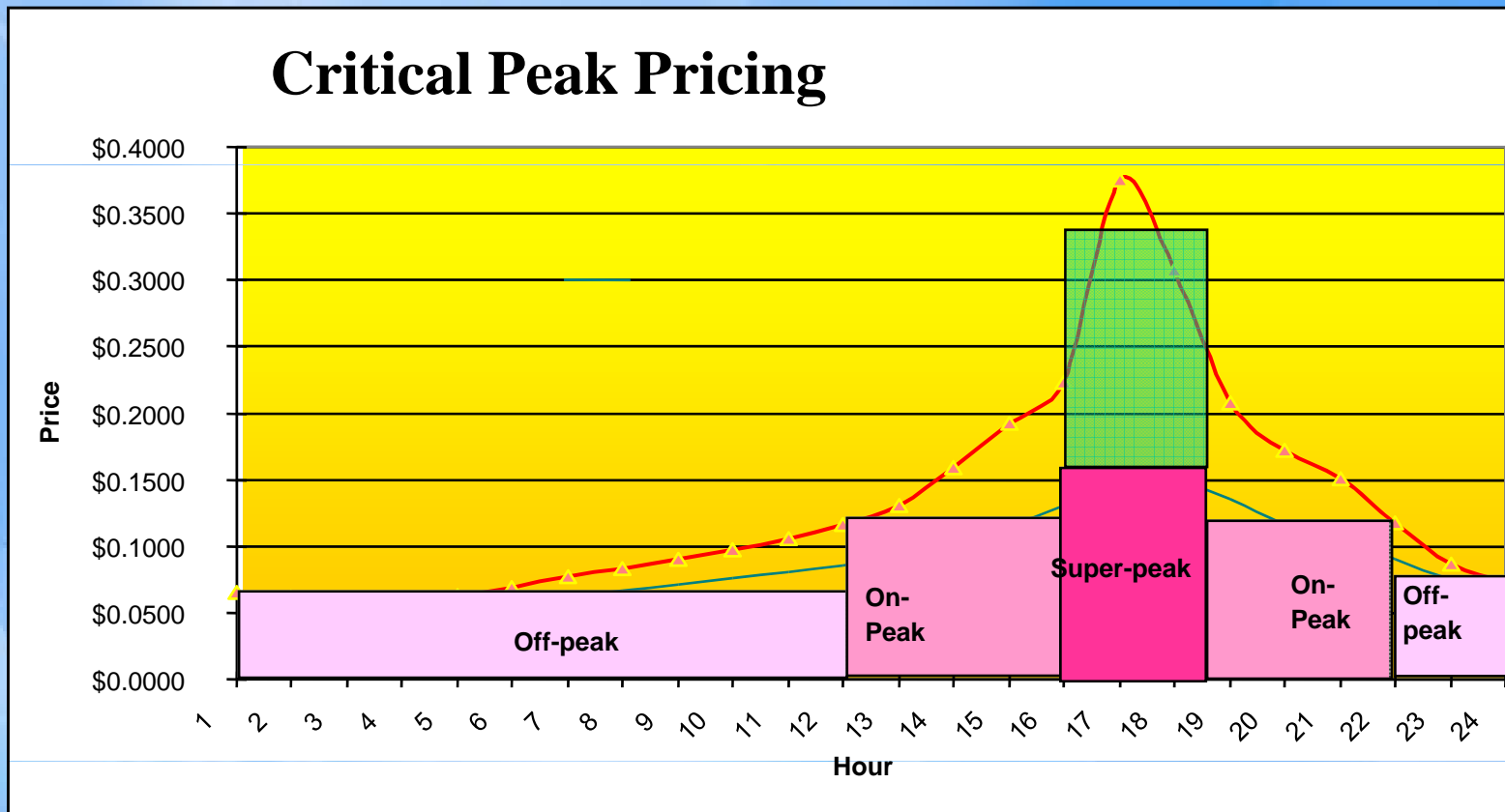
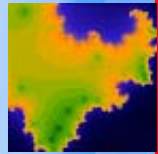


Pricing Potential

- ◆ Alternative rate structures are better at matching costs



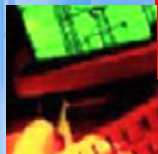
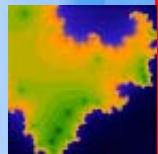
Pricing Potential



Goal 4 Suggested Actions

Short term—investigate the possibilities to:

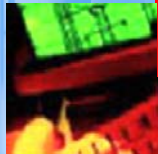
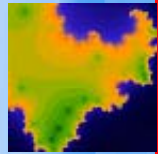
- ◆ Revise the standard residential tariff structure to better align with underlying costs:
 - ❖ Modify tier structure to enhance conservation signal.
 - ❖ Move to a four-month summer season.
- ◆ Extend time-of-use (TOU) rates to commercial customers down to the 20 kW level.



Goal 4 Suggested Actions

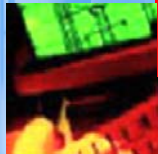
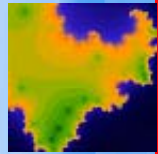
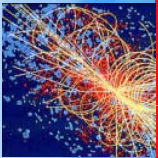
Longer term—research possibilities to:

- ◆ Provide time-differentiated pricing for small commercial and residential customers:
 - ❖ Study supporting meter and data gathering technologies.
 - ❖ Develop TOU designs that assure customer bills will not increase, while encouraging savings from load shifting.
 - ❖ Study the use of enabling technology to assist customers in shifting loads during peak pricing periods.



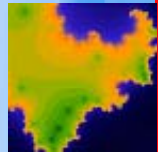
Goal 5

Our customers and community take greater advantage of demand-side management opportunities to further decrease their energy bills, add value to their homes and businesses, and contribute to improving the local economy and environment.



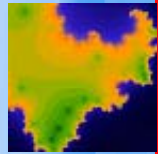
Goal 5 - Opportunities

- ◆ Plenty of opportunity still exists for DSM:
 - ❖ Energy efficiency in new and existing buildings.
 - ❖ Customer-sited PV and distributed generation.
 - ❖ Residential and commercial load management and demand response.
 - ❖ Changes in use patterns due to rate response.
- ◆ Staff is developing estimates of potential opportunities in these areas.



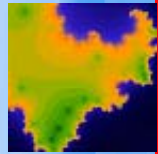
Goal 5 Suggested Actions

- ◆ Expand and develop new load-management programs and policies that allow our customers to participate in reducing summer peak loads.
- ◆ Expand and modify EE programs and activities to help our customers and communities tap into the significant remaining potential for cost-effective energy savings and permanent peak-load reduction in our service territory.



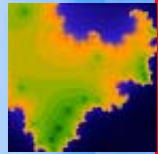
Goal 5 Suggested Actions

- ◆ Develop more detailed market-segmentation and data-tracking systems to allow us to better identify and reach customers likely to benefit from DSM opportunities.
- ◆ Expand multi-year funding for long-term DSM programs and projects.
- ◆ Expand the use of independent program-delivery contractors, including private providers as well as community-based organizations.



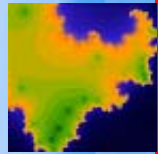
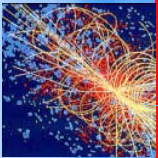
Goal 5 Suggested Actions

- ◆ Target RD&D investments in demand-side technologies towards solutions that address our most pressing needs (e.g., summer air-conditioning).
- ◆ Set a new and expanded goal for customer-sited PV over the next decade while pursuing alternative or new funding mechanisms.



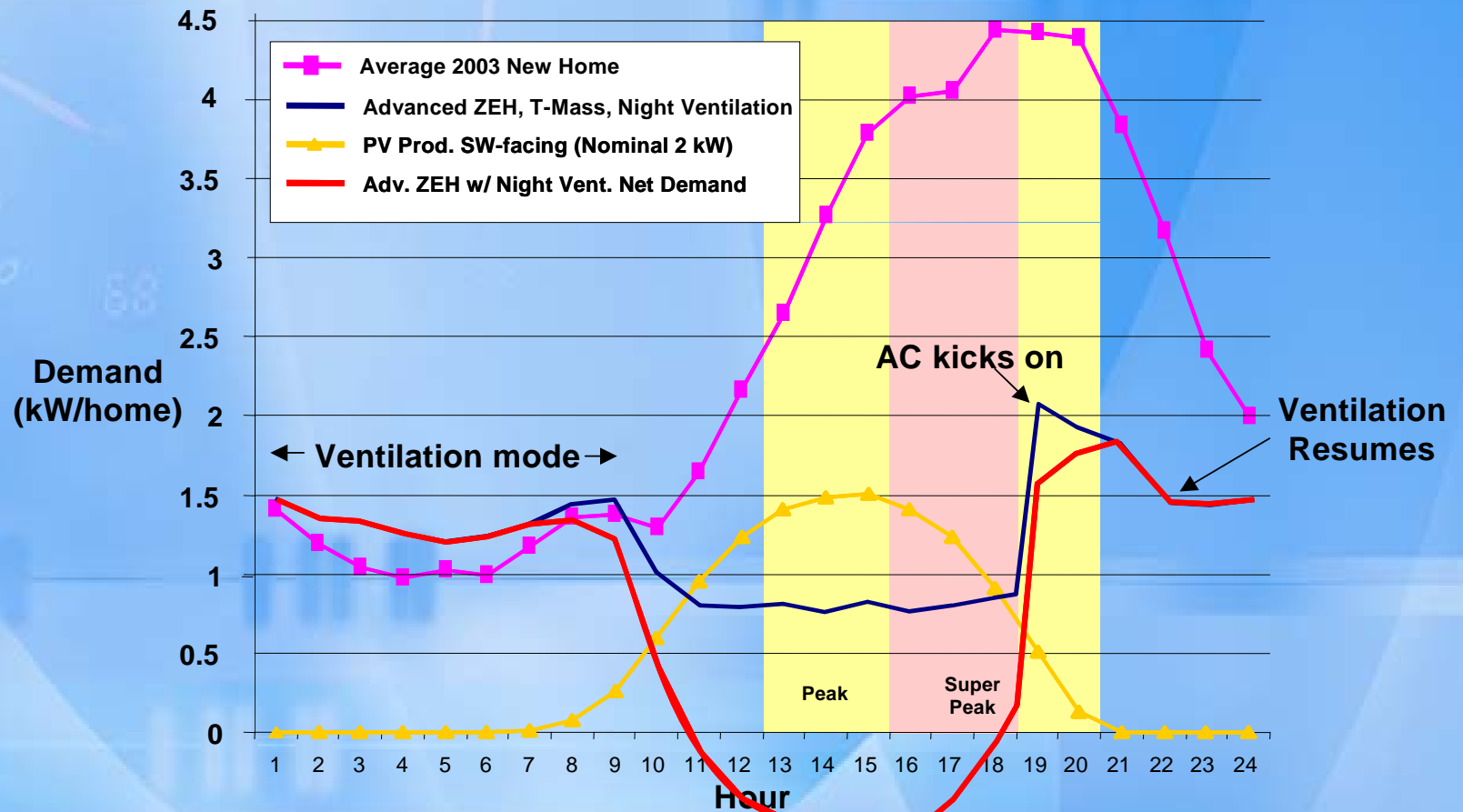
Goal 5 Suggested Actions

- ◆ Develop and implement a more comprehensive and rigorous measurement and evaluation plan, particularly for resource-procurement and load-reduction programs.
- ◆ Accelerate implementation of a residential new-construction program that encourages construction of new homes with little or no contribution to system peak load by bundling energy-efficiency, load management/demand response, and PV options.



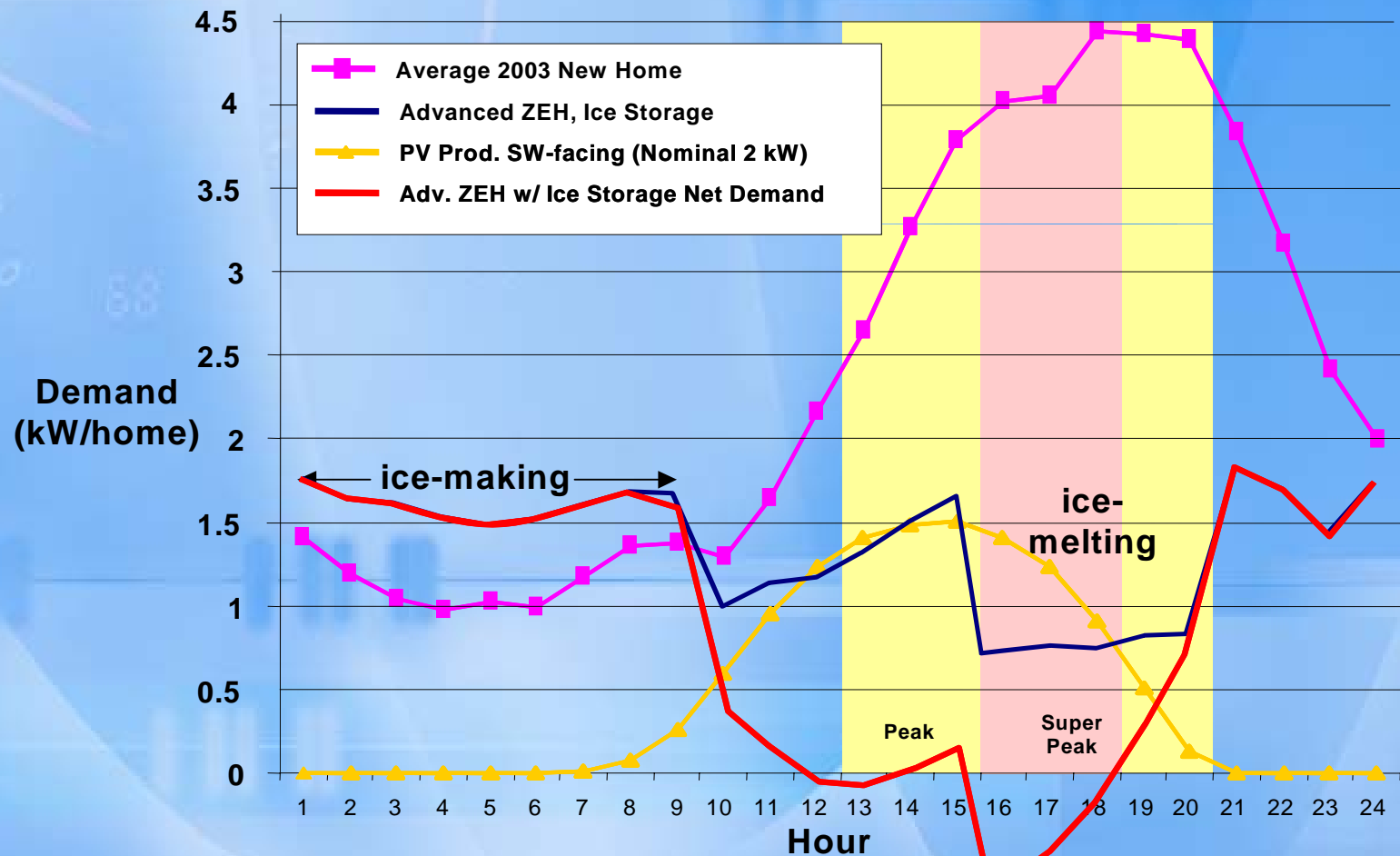
Goal 5 – Bundling Example

Average Summer Day - Residential New Construction



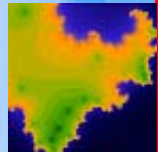
Goal 5 – Another Bundling Example

Average Summer Day - Residential New Construction



Goal 6

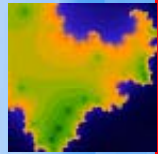
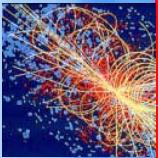
Community embraces a shared vision for energy efficiency and is engaged in making it a reality.



Goal 6 Suggested Actions

LOCAL EFFORTS

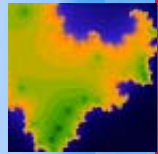
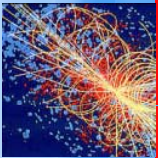
- ◆ Actively foster Sacramento as a “clean energy hub”
 - ❖ UC Davis Energy Efficiency Center
 - ❖ California Lighting Technology Center
 - ❖ CSUS Clean Energy Center
 - ❖ Others: Renewable Energy Institute International, McClellan Tech Incubator, CA Fuel Cell Partnership, Clean Start, SARTA
- ◆ Leverage community activities: Sacramento Regional Marketing Council, Partnership for Prosperity, Blueprint
- ◆ Host a major clean energy or green tech conference
- ◆ Support greenhouse gas reduction as a community goal by establishing a process for customer measurement and reduction (Climate Cool).



Goal 6 Suggested Actions

LOCAL EFFORTS

- ◆ Engage our customers as advocates, delivery channels, and showcase opportunities
 - ❖ Community organizations: social assistance organizations, homeowners assoc, faith-based, youth programs, advocacy groups, civic groups, women's group, multi-cultural groups
 - ❖ Developers/Builders
 - ❖ Building Owners
 - ❖ Business Support Organizations: Valley Vision, American Leadership Forum, Chambers, Rotary, Lions
 - ❖ Major Media: Sacramento Bee, Sacramento Business Journal, Comstocks, Prosper, community publications
 - ❖ Other Utilities
- ◆ Increase SMUD's local-government advocacy efforts for energy efficiency, demand response, and renewables.

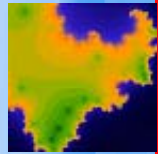
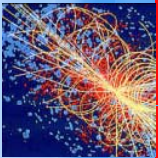


Goal 6 Suggested Actions

STATE EFFORTS

- ◆ Focus state efforts on energy efficiency and renewable energy standards, partnerships, and marketing activities
 - ❖ Northern California Power Agency
 - ❖ CMUA
 - ❖ IOUs
 - ❖ Western Area Power Administration
 - ❖ California Energy Commission
 - Title 24
 - Appliance Efficiency Standards

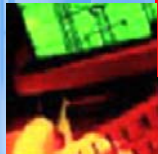
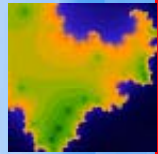
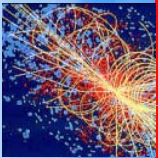
- ◆ Actively participate in and leverage the State's Green Buildings Action Plan.
 - ❖ Green Buildings Team participation
 - ❖ West-End project
 - ❖ Commissioning
 - ❖ Other State construction and retrofit projects



Goal 6 Suggested Actions

NATIONAL EFFORTS

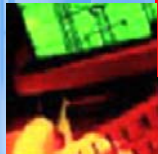
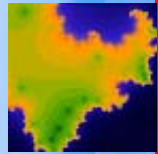
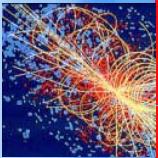
- ◆ Focus national efforts on energy efficiency renewable formal knowledge transfer, partnerships, and marketing activities:
 - ❖ Natural Resources Defense Council
 - ❖ Alliance to Save Energy
 - ❖ Consortium for Energy Efficiency (CEE)
 - ❖ American Council for an Energy Efficient Economy (ACEEE)
 - ❖ National Labs (National Renewable Energy Lab, Berkeley)
 - ❖ U.S. DOE
 - ❖ U.S. EPA
 - ❖ Energy Star



Goal 6 Suggested Actions

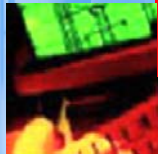
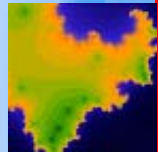
EDUCATION

- ◆ Position SMUD as the first source customers turn to for energy related information and advice.
- ◆ Expand commercial and residential customer education and information offerings
- ◆ Substantially increase efforts in preparing students to be energy and environmental stewards
 - ❖ K-12
 - ❖ Community Colleges
 - ❖ UC Davis & CSUS



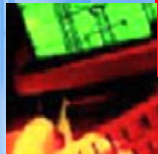
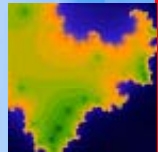
For Future Consideration by the Board

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For Future Consideration by the Board

- ◆ Include in resource comparisons/decisions an explicit proxy for the financial risk of potential future regulation (control) on mercury and greenhouse gas emissions.
- ◆ Rate changes to enhance energy efficiency and peak load reduction.
- ◆ Long-term PV goal.
- ◆ Long-term EE goal.



Next Steps

- ◆ Select project manager to oversee implementation of recommendations
- ◆ Develop work plan to include
 - ❖ Task
 - ❖ Timeline
 - ❖ Responsible person
- ◆ Get agreement on work plan from Steering Committee, Directors and Managers
- ◆ Incorporate implementation into performance plans of assigned persons
- ◆ Quarterly meetings with Steering Committee

