Energy Efficiency Leadership for Data Centers and IT:
PG&E’s Program & Service Portfolio

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Discussion Points

- Why is PG&E helping customers to use less energy
- What is driving the emphasis on energy efficiency in the Information Technology/Data Center sector
- What programs and services has PG&E developed
- What strategies should we be taking to move towards “Green IT”
- Getting there: a leadership challenge.
Why Energy Efficiency?

- Our customers expect/love the programs
- All customers benefit through lower rates
- PG&E benefits financially
- Energy efficiency is the cornerstone of our commitment to environmental responsibility and quality
30 Years of Energy Efficiency Success

- Energy efficiency programs have helped keep per capita electricity consumption in California flat over the past 30 years.
- PG&E’s programs alone have avoided the release of over 1 million tons of CO2 into the atmosphere over the same period, equivalent to taking 8.6 million cars off the road for a year.

- **Therms (x100,000)**: 102 (2006), 179 (2007), 195 (2008)
PG&E’s Focus on High Tech

- PG&E serves Silicon Valley – almost all of the industry heavyweights have a presence here
- They have their own facilities, and they are bringing solutions to energy challenges facing their customers
- The focus is on data centers and IT infrastructure
Our Direct Market

- A total load of 400–500 MW (2.5% of total, compared to 1.2% nationally)
- “Enterprise” centers are known (stand-alone and co-location)
- “Corporate” centers are hidden in office buildings and campuses
- “Closets” are invisible
- The key challenge for enterprise and some corporate data centers is space, cooling, and power supply constraints, in the face of...
Intense Growth Rates…

- IT workload growth is multiples of GDP for most companies, and can be 10x for some sectors (financial services, web businesses)
- All companies facing huge growth rates in data storage (50 to 100% annual growth not uncommon)
- When your back is up against the wall for IT capacity, you might consider…
...An “Instant” Data Center
Where’s the Data Center?
Here’s the Data Center!
PG&E’s Targeted Market Philosophy

- PG&E moved to a market-focused portfolio instead of a program portfolio for EE in 2006
- Results are a greatly expanded portfolio of product and service offerings, superior customer satisfaction, better program performance
Data Center Offerings pre–2006

- Audits, incentives that addressed cooling systems only:
  - High-efficiency equipment (chillers, pumps, fans, etc.)
  - VFD’s
  - Air- and water-side economizers (“Free Cooling”)

- What we were missing:
  - Anything having to do with operations “inside the white room”
Energy use in a high-performance data center (LBNL/PG&E Study)
New Initiatives in 2006

- Incentives for energy-efficient computing equipment (Rip & Replace only)
- Incentives for virtualization/consolidation
- Incentives for airflow control systems
- Incentives for high efficiency UPS and power distribution systems
- High quality technical services for cooling systems (retrofit and new construction)
New/Coming in 2007

- Incentives for energy efficient computing equipment (new installations)
- Focus and incentives on efficient data storage technologies (MAID, others)
- Retro-commissioning program for airflow management
- 80 Plus program for computing equipment (servers)
- Rebates for PC network management software (Now)
- Incentives for conversion to thin-client systems
Industry agrees that a third to a half of data center energy use can be addressed through cost-effective, reliable energy efficient technologies and strategies.

PG&E announces formation of national utility coalition to extend program adoption.
Recommended Strategies

For CIOs and IT Operations:

- Join Climate Savers Computing Initiative
- Spec LCD monitors that exceed Energy Star standards
- Consider thin client/desktop virtualization
Recommended Strategies

For CIOs and IT Operations:

- Begin or accelerate adoption of virtualization technology – consolidate server and storage equipment
- Evaluate free cooling strategies for your data center
- Institute airflow management best practices; raise supply air temperature; widen humidity set points
Recommended Strategies

For Utilities:

- Join Climate Savers Computing Initiative
  - Join 80 Plus program, and offer incentives for PC Network Management Software
- Offer incentives for virtualization/consolidation
- Adopt a new construction incentive program
- Consider adopting broad program and service model (learn more through utility coalition)
Recommended Strategies

For IT Industry:

- Support energy efficiency metric development through Green Grid and other bodies
- Advocate for utility incentive programs
- Join Climate Savers Computing Initiative and offer products that meet standards
- Partner with customers to deliver technologies, products, and solutions that drive towards “Green IT”
Our Challenge

What does leadership in this market look like?

- Data centers and IT operations that use multiple strategies to drive high efficiency
- Equipment providers driving superior efficiency as well as performance
- Utilities partnering with customers to provide solutions
More Information

Visit [www.pge.com/hightech](http://www.pge.com/hightech)

Contact me with feedback and suggestions:

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