Strategic Positioning of the Natural Gas Industry in Advance of State and National Greenhouse Gas Legislation and Regulation

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Natural Gas STAR
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Agenda

- About PG&E and our Business
- Decoupling
- ClimateSmart
- Renewable Natural Gas

Pacific Gas and Electric Company

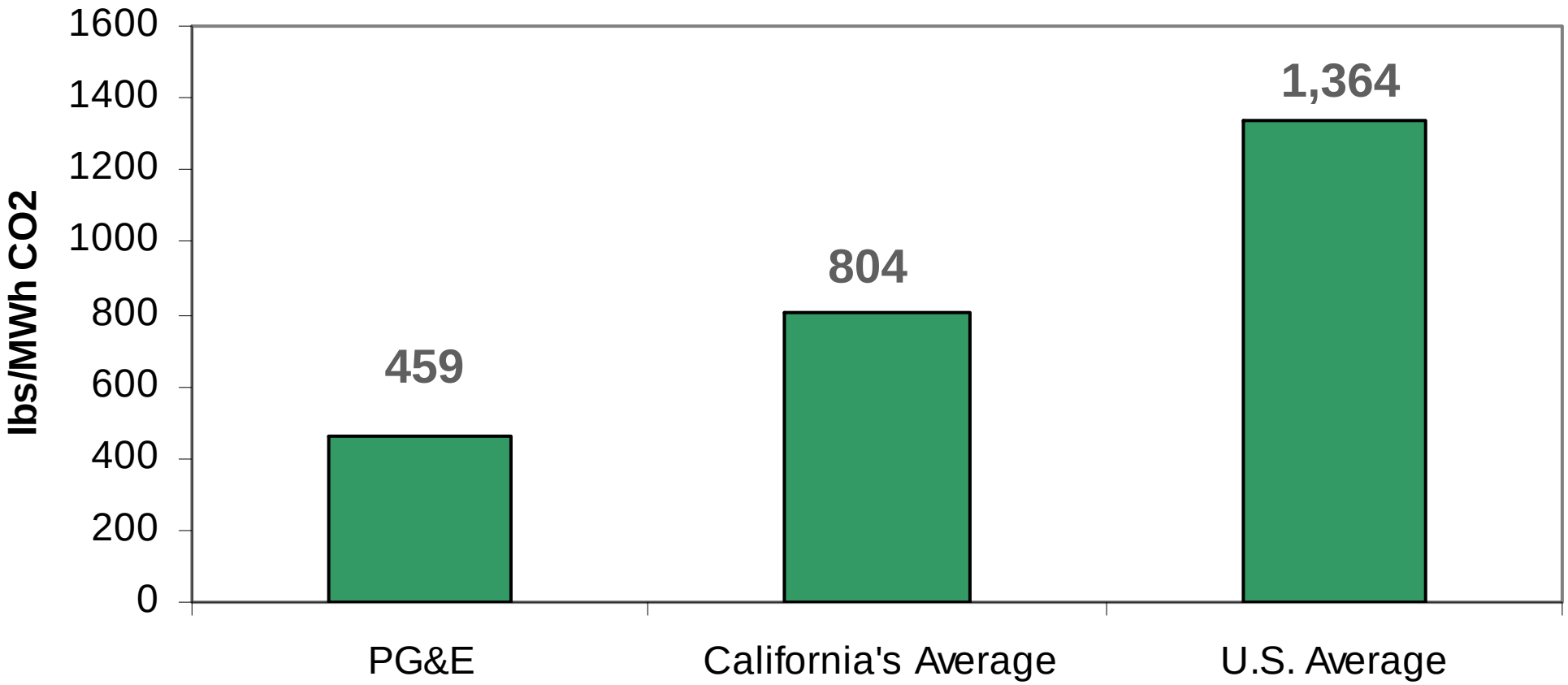
About PG&E and Our Business

What we do:

- Deliver safe, reliable, and environmentally responsible gas and electricity to approximately 15 million Californians

Electric and gas distribution customers	5 million electric 4.2 million gas
Electric transmission circuits	18,616 miles
Gas transmission backbone	6,128 miles
Electric generation capacity	6,420 MW

Benchmarking GHG Emissions for Delivered Electricity



Note: All figures for emissions from electric power generation. PG&E's GHG emissions inventory is registered with California Climate Action Registry.

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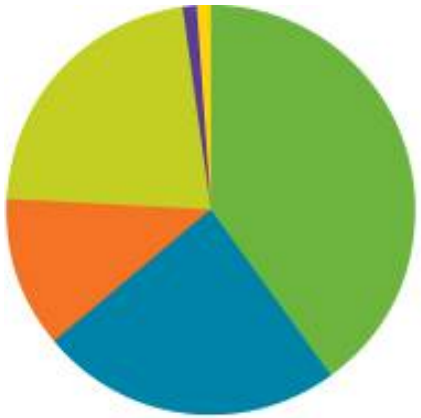
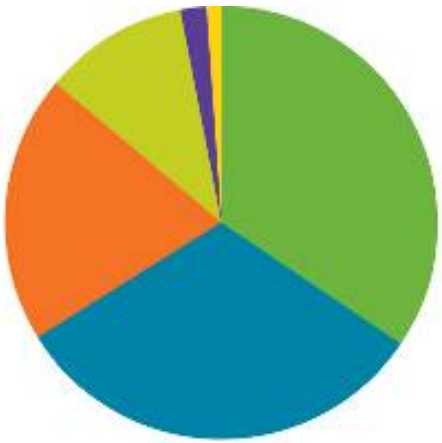
PG&E's 2006 Electric Power Mix

Total Electric Power Delivery Mix



- Natural Gas - 40%
- Nuclear - 24%
- Total California Renewable - 12%
- Large Hydroelectric - 22%
- Coal - 1%
- Other - 1%

California-Eligible Renewable Resources



- California-Eligible Hydroelectric - 35%
- Biomass - 32%
- Geothermal - 20%
- Wind - 11%
- Biogas - 2%
- Solar - less than 1%

Decoupling

Gas Revenue Decoupling

- Decoupling of revenues/sales for non-fuel costs began in 1978 for natural gas; 1982 for electric:

  "…the adoption of an ERAM [Electric Revenue Adjustment Mechanism] … will eliminate any disincentives PG&E may have to promote vigorous conservation measures and also be fair to ratepayers in assuring that PG&E receives no more or no less than the level of revenues intended to be earned."

  California Public Utilities Commission
  Decision 93887, **12/30/1981**

- Key goal: encourage conservation
- Broad stakeholder support at time: PUC staff, Energy Commission, environmentalists, PG&E, other utilities
- All but about 4.2% of gas revenues are decoupled

How Decoupling Works

Simplified Example:

- Sales forecast = 100 kWh
- Fuel/Power cost = 4¢ per kWh
- Investments and Operating costs = $6.00
- Authorized revenues = $4 + $6 = $10
- Rate per kWh = 10¢ per kWh ($10/100kWh)

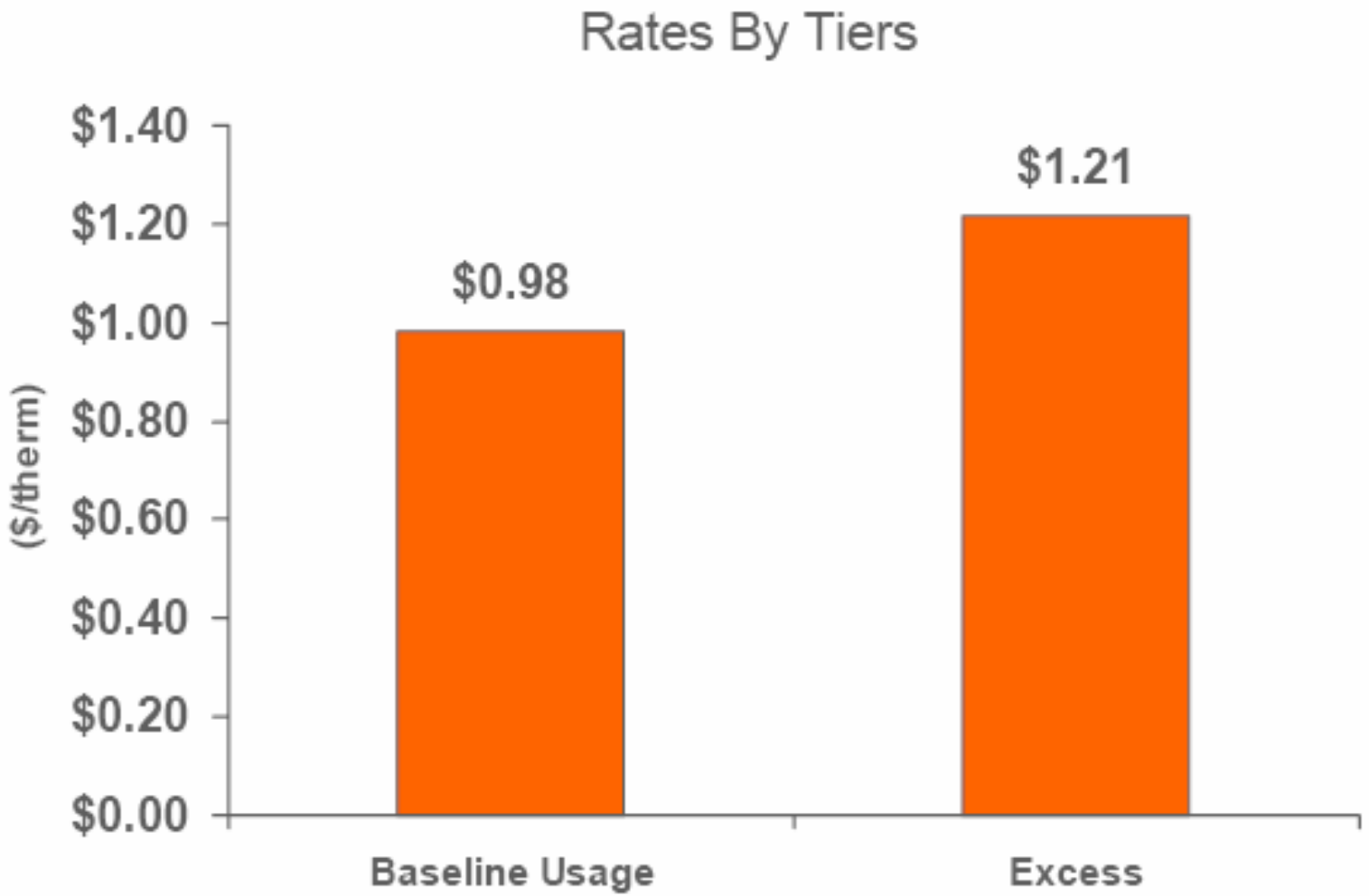
Example of Sales *Below* Forecast:

- Actual sales = 95 kWh
- Fuel/Power cost = 4¢ per kWh x 95 kWh = $3.80
- Investments and Operating cost = $6.00
- Actual total cost = $3.80 + $6 = $9.80
- Actual revenues = 95 kWh x 10¢ per kWh = $9.50

Utility has *under-collected* its Investment and Operating Costs by $0.30

Decoupling adds $0.30 to next year's total revenue to be collected from customer.

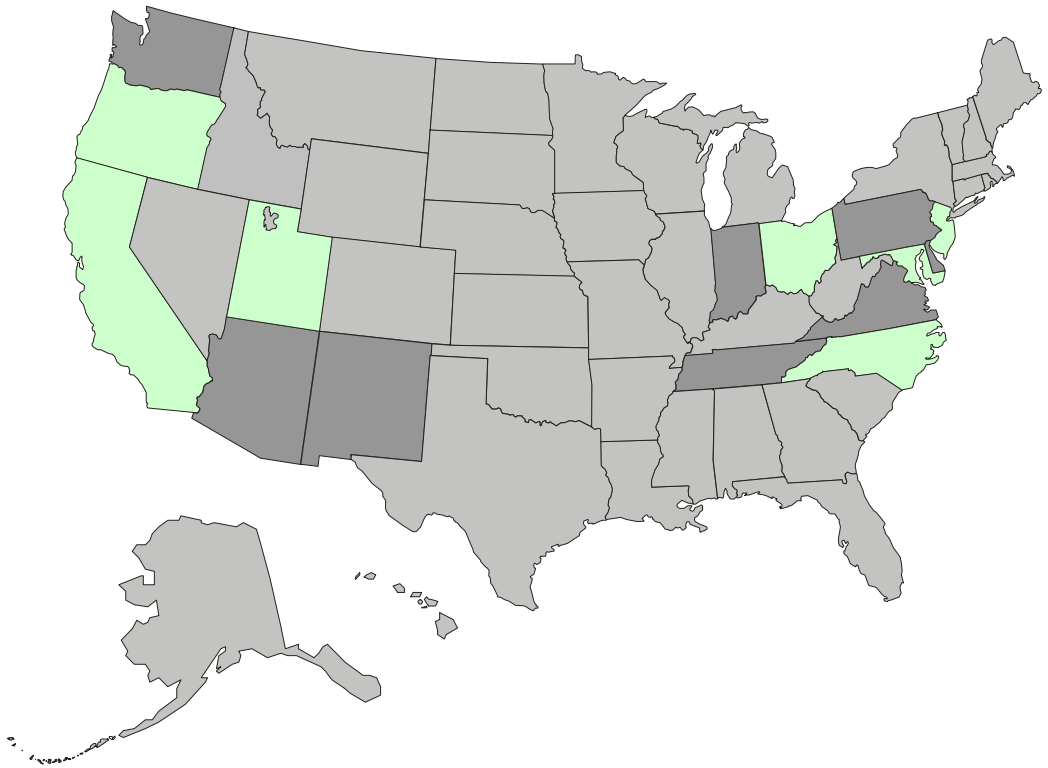
Decoupling - Tiered Rates



Current Non-Care Rates Effective July 7, 2006 (Bundled – includes transportation and procurement). Does not include Public Purpose Program Surcharge

States with Gas Revenue Decoupling Mechanisms

PG&E is at the forefront of a national effort to develop sustainable energy communities.



CA – PG&E, SDG&E, SC Gas, SW Gas
MD – Baltimore Gas and Electric, Washington Gas
NJ – NJ Natural Gas, South Jersey Gas
OH – Vectren Ohio
OR – Cascade
OR – NW Natural Gas
NC – Piedmont
UT – Questar

Pending:
Utilities in AZ, DE, IN, NM, PA, TN, VA, WA

Energy Efficiency and Revenue: Decoupling

For most utilities, revenue varies with sales. Sell more energy, make more money.

Successful energy efficiency (EE) decreases sales reducing revenues, providing a dis-incentive to pursuing energy efficiency

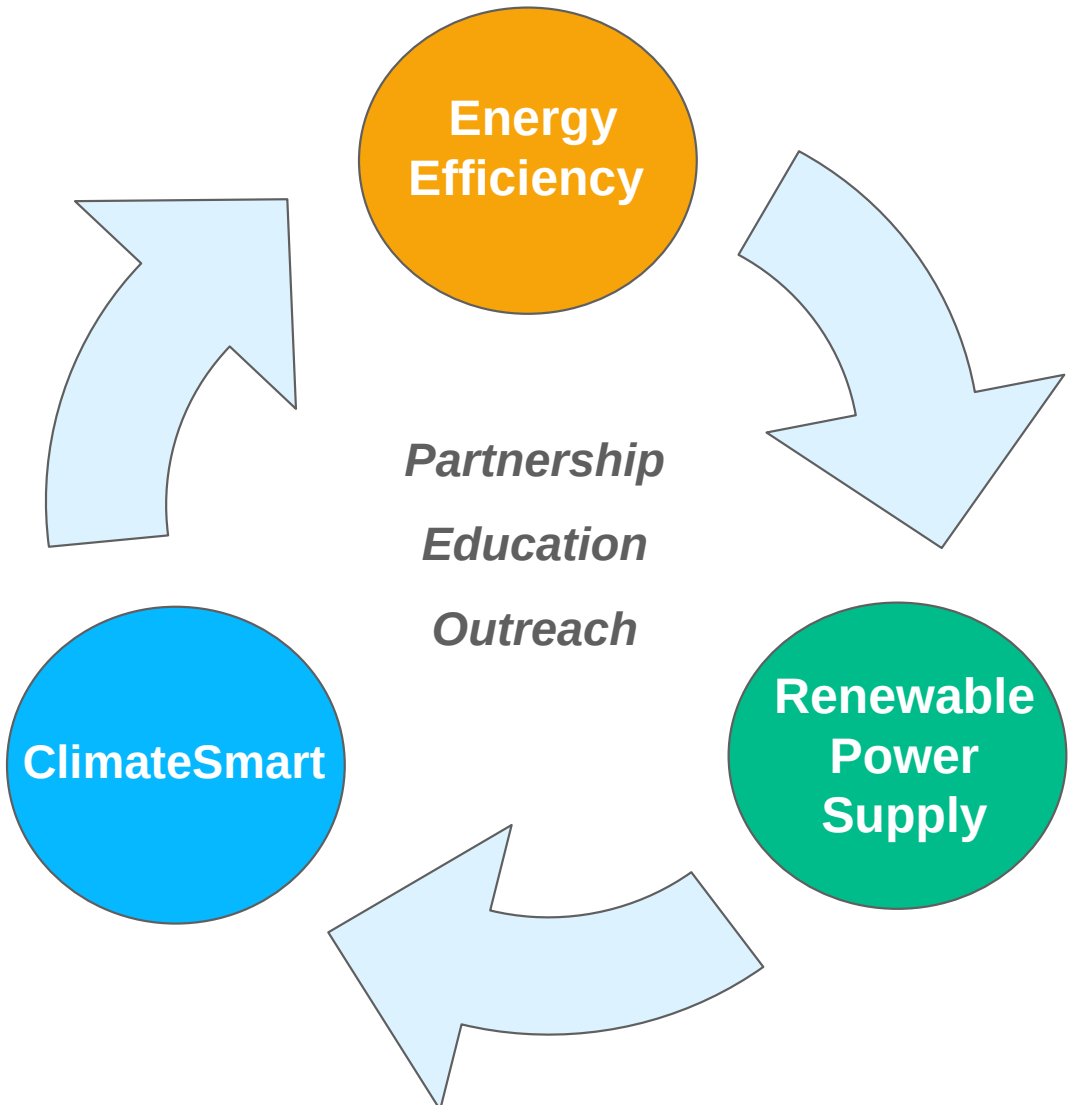
The solution is decoupling

- Compute rates to recover future investment and operating costs at forecasted levels of sales
- If actual sales are lower or higher than predictions, the utility calculates the revenue shortfall or excess
- This difference is used to adjust the succeeding year's rates up or down
  - revenues to cover predicted investment and operating costs are independent of sales
  - opportunity to earn authorized rate of return is intact
  - actual earnings depend on managing costs
- Decoupling insulates against all factors that cause sales to vary, not just energy efficiency

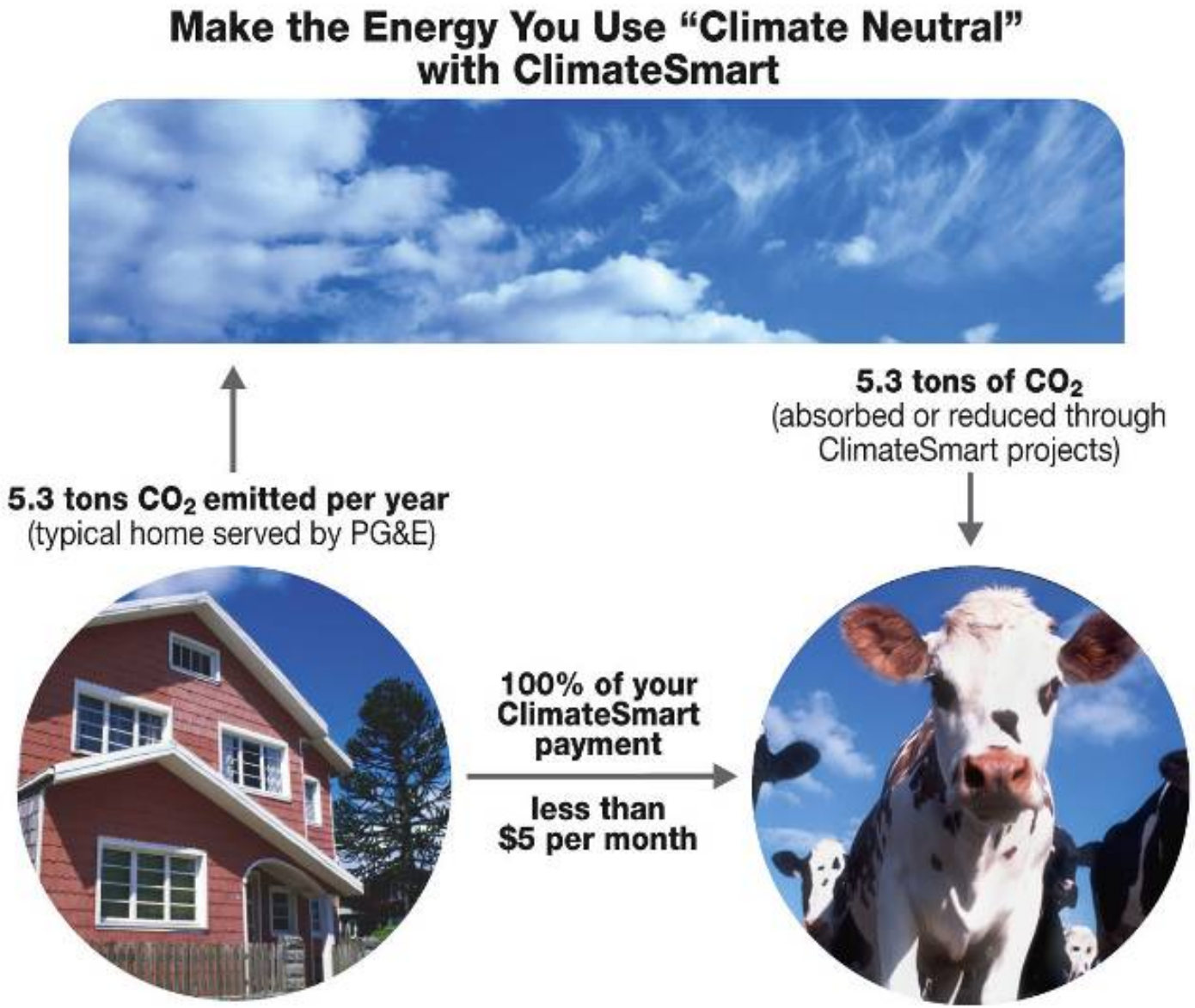
ClimateSmart

ClimateSmart is part of a holistic portfolio offered by PG&E

PG&E Portfolio Solution



ClimateSmart™ – "Climate Neutral" Energy



“Climate Neutral” Energy

- 100% of the funds collected will be invested in projects that sequester or prevent greenhouse gas emissions.
- PG&E is using a competitive bidding process to select the **best greenhouse gas emission reduction projects available**, using clear and stringent criteria.
- To ensure the integrity of the program, all greenhouse gas reductions for ClimateSmart will be **independently certified, registered, and retired** with the non-profit California Climate Action Registry.
- Projects will be carefully screened for “additionality” – meaning that these projects **would not have happened** without the voluntary financial support of ClimateSmart customer payments.

Greenhouse Gas Emission Reduction Projects

California Climate Action Registry Projects

	Reforestation / Conservation	Dairy Methane Capture*	Potential Others**
Types of Projects			
Example of Potential Projects	**Forest Conversion, Management, and Reforestation** 	**Methane Gas Mitigation Projects** 	**Transportation Efficiency**  **Urban Forestry** 
Benefits	• Carbon sequestration • Habitat preservation • Watershed protection • CA is losing ~ 40,000 acres of forestland annually	• Reduce impact of methane (21x greater impact per tonne than CO_2) • CA has 1,900 dairies, only ~20 capture their methane	**Transportation** • Reduce emissions • Reduce smog • Provide cleaner air **Urban Forestry** • Shade cooling • Carbon sequestration

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* Pending CPUC approval.
** Protocols for these potential projects have not yet been defined.

Competitive Solicitation Process

- Initiated first solicitation on June 28, 2007.
- Currently in contract negotiation stage.
- Expect to sign contracts by Q1 2008 for up to 250,000 tons of GHG reductions.
- PG&E plans to do another 2-3 solicitations by end of 2009 for a total of at least 2 million tons of GHG reductions.

www.pge.com/about_us/environment/features/climatesmart_2007_requests.html

Examples of ClimateSmart Customers

Longs Drugs
Live healthy. Live happy. Live Longs.

newresourcebank

My Gym Children's Fitness Center

tendris

PG&E

Sierra Nevada

Edward Jones
MAKING SENSE OF INVESTING

Rocklin

WALDECK'S OFFICE SUPPLIES

Renewable Natural Gas

Cow Power

- New, innovative way PG&E is realizing its renewable energy goals
- Bio-methane from dairy manure will be sent through California's natural gas pipelines
- Provides renewable energy and prevents methane from escaping to the atmosphere
- Avoids local air impacts in California's Central Valley

Advantages of Pipeline Biogas

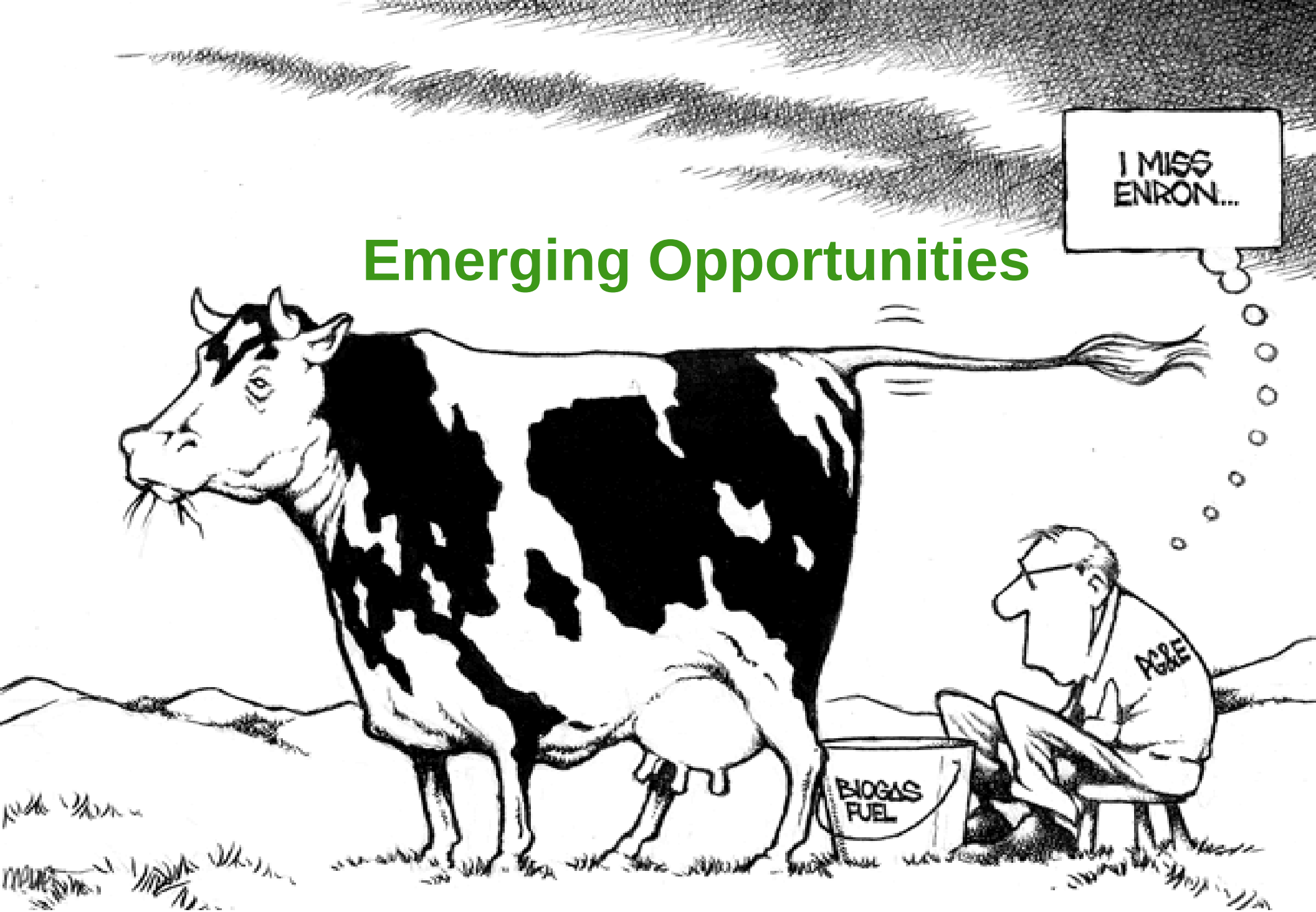
- Provides reliable renewable gas supply
- Most efficient use of biogas for generating electric energy
- Significant reduction of greenhouse gas emissions at dairy
- Utilizes existing transmission pipeline infrastructure
- Provides dairy with new revenue source
- Improves air quality by removing a combustion source

Example: Microgy Purchase Agreement

- Approved by CPUC in August 2007.
- Will deliver up to 8,000 Mcf of pipeline quality renewable natural gas daily, captured from cow manure.
- Microgy will construct state-of-the-art production facilities on the site of large dairy farms in California and interconnect those systems to PG&E's extensive gas pipeline network.
- Biogas must meet PG&E's quality specifications.
- PG&E customers will benefit from a new source of renewable, environmentally-friendly energy.

Photo of Microgy's proprietary anaerobic digestion technology at a Texas dairy, delivering gas into a transmission pipeline.

Emerging Opportunities



Contact Information:

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Appendix

PG&E's Stance on Climate Change

"Within the span of a generation, we need to significantly transform the ways we provide for our energy needs. If we rise to the challenge, we can head off the dangers of global warming. We can help secure America's long-term economic prosperity. We can reduce our dependence on unstable parts of the world. And we can even instill in our nation a new sense of global leadership."

-- Peter A. Darbee, Chairman,
CEO and President, PG&E Corporation

Remarks made at National Press Club during ceremony at which National Resources Defense Council (NRDC) honored PG&E for the Company's long and ongoing track record of environmental leadership. January 17, 2007

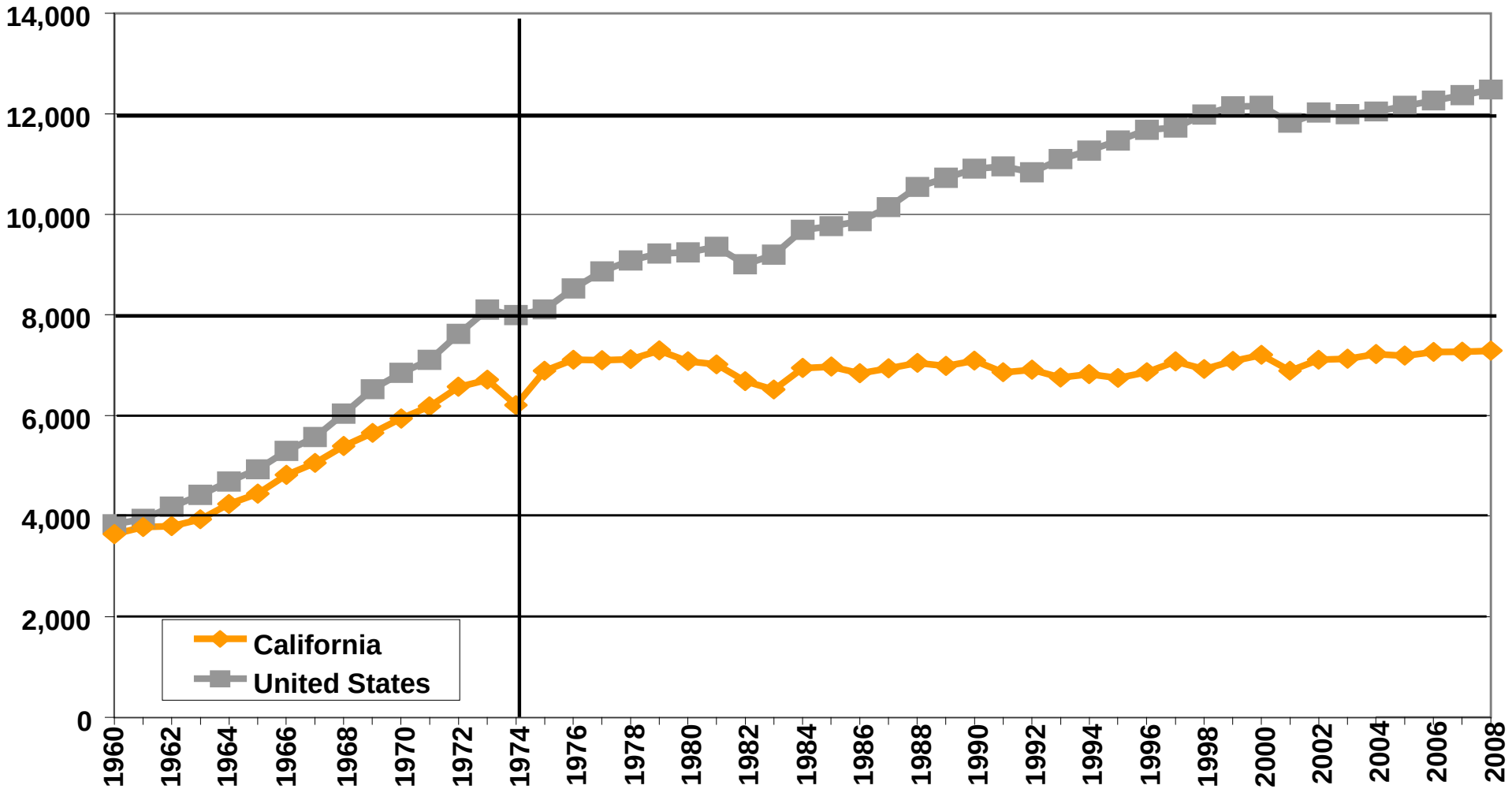
California Regulatory Landscape

- AB 32 - a multi-sector cap on statewide GHG emissions in California
  - "This legislation requires the California Air Resources Board (CARB) to adopt a GHG emissions cap on all major sources, including the electricity and natural gas sectors, to reduce statewide emissions of GHGs to 1990 levels." Ref: PUC scoping memo
- CPUC cap on emissions associated with the delivery and use of electricity and natural gas
  - "I will establish procedures for consideration in Phase 2 of GHG emissions cap policies for customer use of natural gas" Ref: PUC scoping memo
- CPUC GHG Performance Standard
- California's Low Carbon Fuel Standard

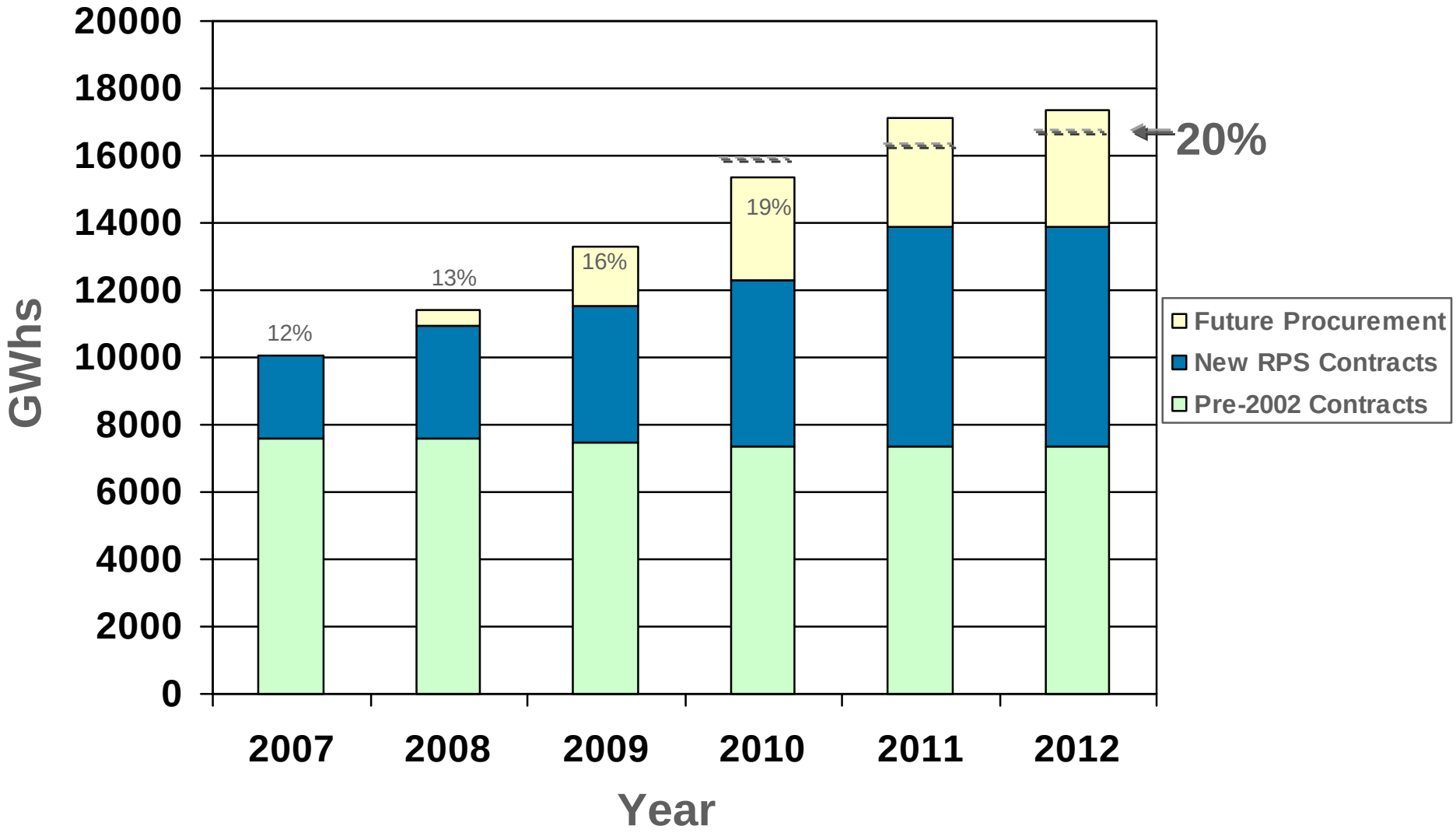
Efficiency, conservation & renewables

Committed to Energy Efficiency

Over the past 30 years, California per capita energy use has remained relatively flat compared to the 50% increase in U.S. per capita energy use.



PG&E Expects to Meet the 20% Goal Under Flexible Compliance Rules



- 2008 to 2012 estimates are based on forecasted construction schedules and additional contracted resources
- Assumes that all contracts perform

Don’t just take our word for it

- "We can prevent the most devastating consequences of global warming, but only if we act swiftly and decisively to reduce global warming emissions. By meeting strict standards for offsets, the ClimateSmart program will engage individuals and businesses as part of the solution in the fight on global warming.“ – **Karen Douglas, Director, California Climate Initiative, Environmental Defense**
- "I am delighted to see the PG&E ClimateSmart program opening to enrollment, and intend for our family to sign up right away. Voluntary programs such as ClimateSmart illustrate the opportunities that exist to address global warming, and the power of individuals to send a message that personal action is both possible and significant." – **Dan Kammen, Professor in the Energy and Resources Group, in the Goldman School of Public Policy, and Director of the Renewable and Appropriate Energy Laboratory, University of California, Berkeley**
- "ClimateSmart is an inspiration to all of us.“ – **William McDonough, FAIA Architect**

Renewable Portfolio Standards
Eligible Renewable Resources - Traditional

Eligible Renewables - Emerging

Solar Energy

- California has significant Solar resources that closely follow PG&E's load profile
- PG&E has announced power purchase agreements with:
  - CleanTech America (5MW)
  - GreenVolts (2MW)
  - Solel (553 MW)

BioGas

- California has significant resources for bio-methane generation and capture
- PG&E has announced gas purchase agreements with BioEnergy Solutions and Microgy for the purchase of pipeline-quality biogas from dairy waste.

Ocean Power

- PG&E is examining the potential of both wave energy and tidal energy for electric generation.
- PG&E has announced the "WaveConnect" project to examine wave energy off the California coast and a project to examine tidal energy under the golden gate bridge.

Example: Anaerobic Digestion — Dairies

- California has 1.7 million cows in 1,900 dairies
- Cow manure decomposes and creates “biogas” – releasing methane and carbon dioxide into the atmosphere
- Methane has at least 21 times per tonne the climate change potential of CO_2
- Key opportunities:
  - capture and combust biogas through controlled process using anaerobic digesters
  - combust biogas on-site in a generator and feed it into electric grid
  - further refine biogas into “bio-methane” and inject into gas transmission pipeline

Anaerobic digestion is a proven available technology commonly used in Europe.