


AMD's Global Climate Protection Plan 2006

Case Study for EPA Climate Leaders

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Global Environmental Health and Safety**

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AMD - a leading global provider of innovative microprocessor solutions for the personal and enterprise computing, communications and consumer electronic markets.

Headquarters: Sunnyvale, California

Employees: 10,500 worldwide

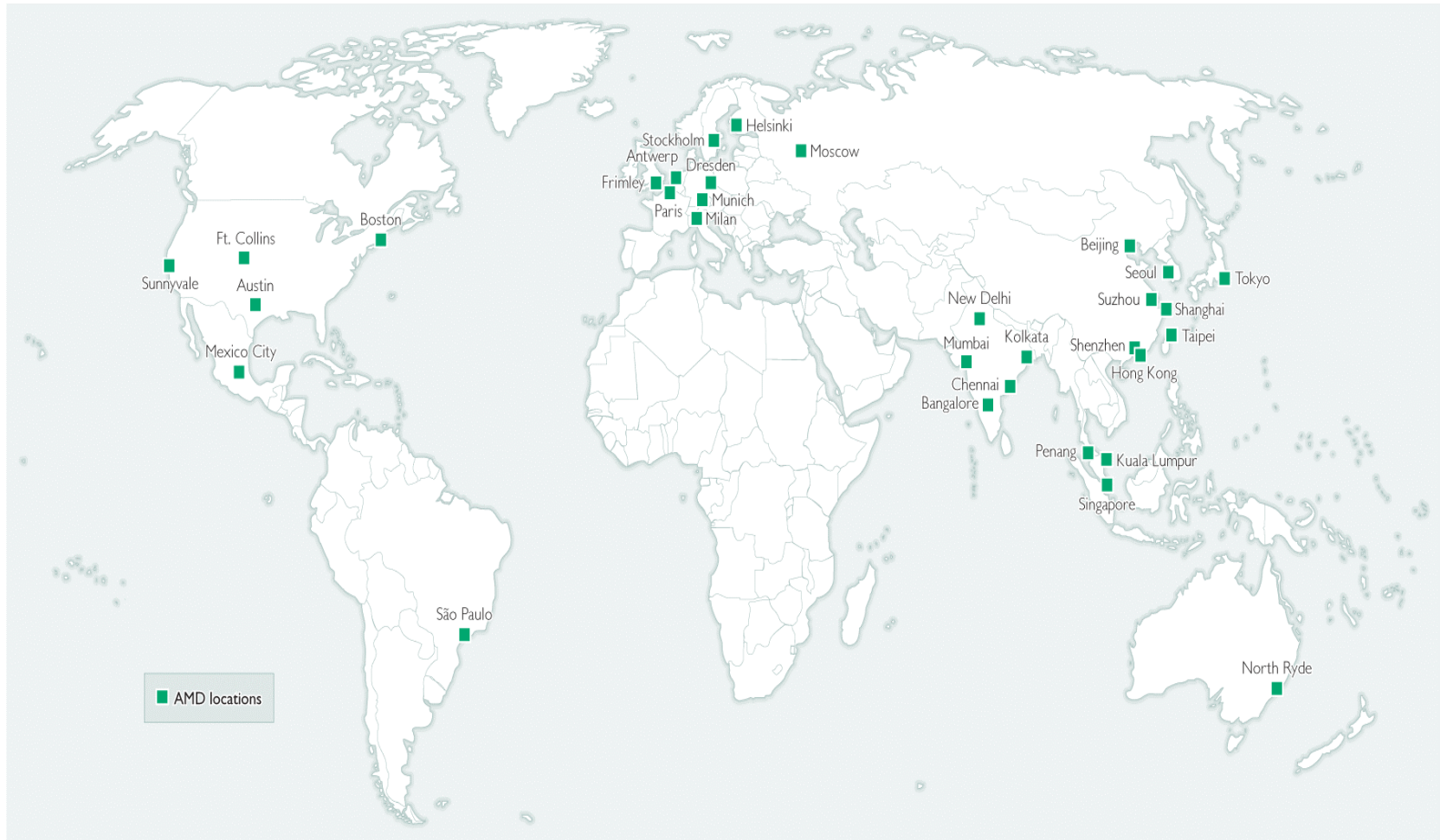
Sales Mix: 70% international

2005 Revenue: \$5.85 billion

Founded:
1969



A Global Enterprise



... and many sales locations Worldwide



A Responsible Global Corporation

Corporate Values

- Respect for people
- Integrity and responsibility
- Knowledge
- Initiative and accountability
- Competition
- Our customers' success is our success

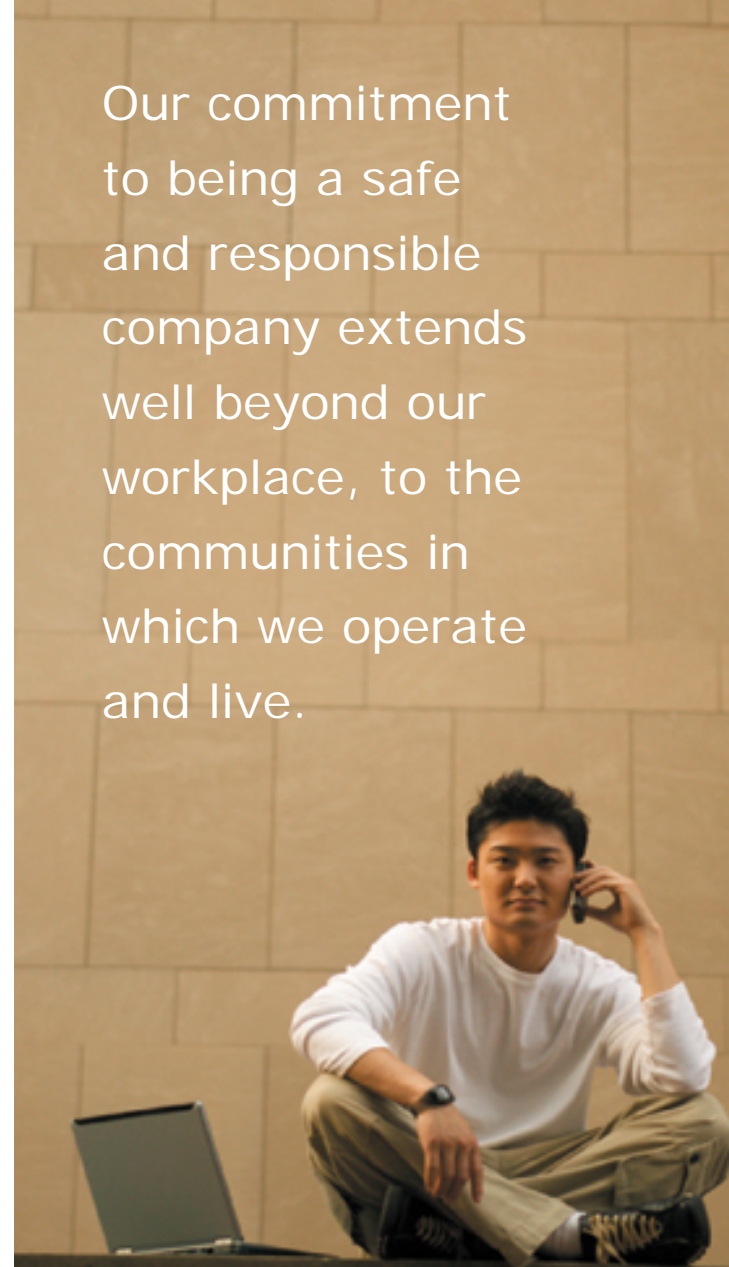
Social Performance

- Helping people succeed
- Ensuring a safe and healthy workplace
- Partnering with our communities

Environmental Performance

- Designing for EHS
- Measuring our performance
- Global climate protection

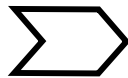
Our commitment to being a safe and responsible company extends well beyond our workplace, to the communities in which we operate and live.



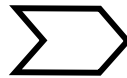
Life Cycle Approach to Stewardship

- AMD's Design for Environment, Health, and Safety (DfEHS) approach strives to integrate EHS considerations into design processes to minimize the EHS impacts of AMD's products and the operations that create them
- DfEHS provides the greatest opportunity to influence EHS impacts
- DfEHS is a continuous improvement process

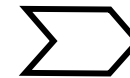
Product Design



Manufacturing



Product Use

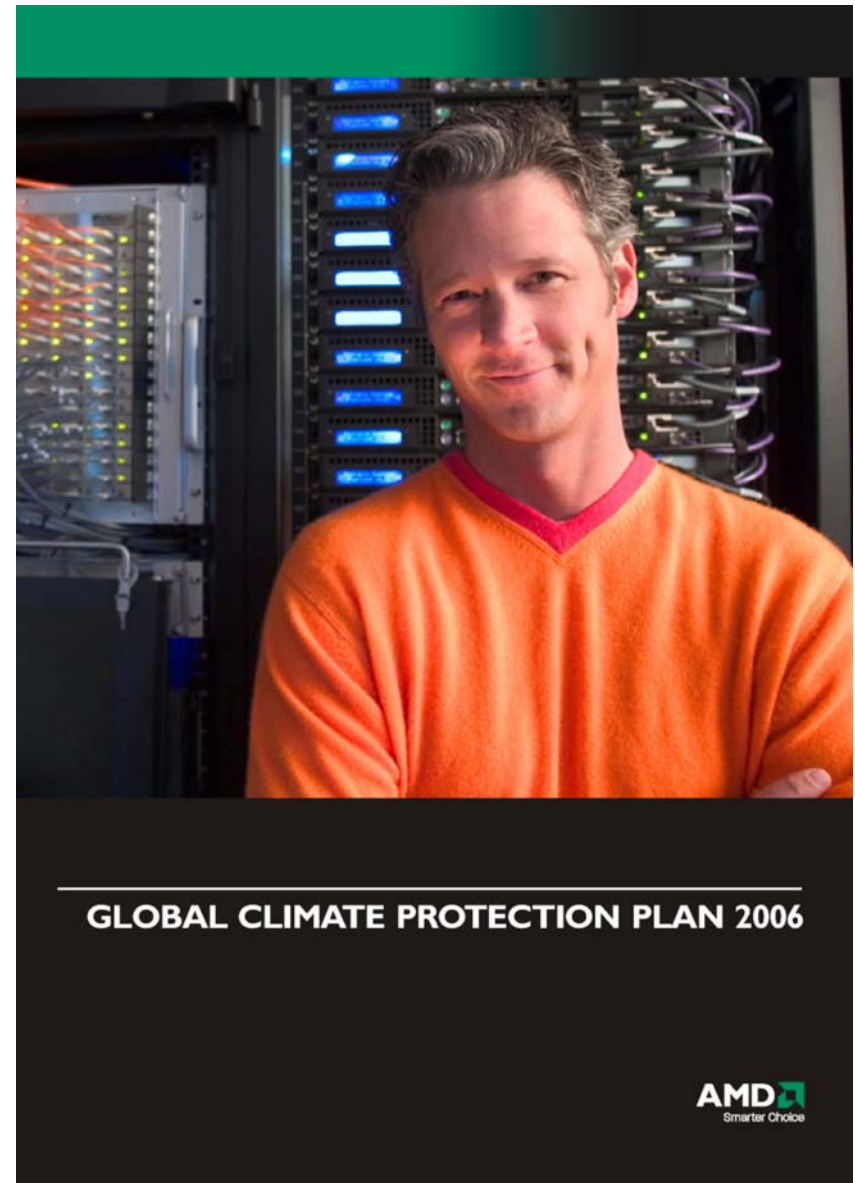


End of Life



GCPP 2006

- AMD has published annual Global Climate Protection Plans since 2001
- GCPP 2006 is posted at www.amd.com/climate
- GCPP includes AMD's commitment, goals, and strategies for reducing impacts on global warming
- Strategic challenges for future planning



AMD's Global Climate Protection Commitment (2006 update)

Climate change presents a range of complex risks to the global community and to our common vision of a prosperous future. We recognize our responsibility as a global citizen to reduce our direct impacts on the environment and to inspire and enable others to do the same.

We do this through the development of energy efficient technology and through the responsible design and operation of our facilities. Our commitment, strategy, and progress are reviewed annually at the executive level of the corporation.

Hector Ruiz, Chairman and Chief Executive Officer
Dirk Meyer, President and Chief Operating Officer

General Emissions Reduction Approach

- AMD continues to seek out opportunities to reduce greenhouse gas emissions in all areas relevant to its operations and products.
- Greatest potential to reduce greenhouse gas emissions lies in:
 - Continued development of energy efficient, enabling technology for our customers
 - Optimization when designing new facilities and purchasing equipment
 - Sourcing lower global warming impact energy supplies
 - Optimization and change in manufacturing processes
 - Our employees' actions
 - Leadership by example

Voluntary Climate and Energy Initiatives

Product Energy Efficiency

- Developing Energy-efficient Technology for:
 - Servers
 - Desktops
 - Notebooks
 - Innovative products for emerging markets – “One Laptop Per Child”
 - Embedded Solutions
- Leading improvements in Data Center Energy Efficiency
 - Co-sponsored EPA **ENERGY STAR**® 2006 Data Center energy efficiency conferences
www.energystar.gov/datacenters
 - Founding member of The Green Grid™, which is developing best practices/metrics for Data Center energy efficiency
- **ENERGY STAR** Special Recognition
 - In 2005 for Advancement of Energy Efficient Computer Technologies for AMD Cool'n'Quiet™ power management technology
 - In 2001 for Technical Innovation for AMD PowerNow!™ power management technology



image credit: fuse-box

Taking Global Action on Customer Energy Use



the green grid

- Founding Member of The Green Grid
- Supported by U.S. EPA & Alliance to Save Energy
- Mission: Best Practices & Metrics



egenera®



www.TheGreenGrid.org



Focus on AMD Technology

- Product Power Consumption Reduction Goal: Design new microprocessors with state-of-the-art power management technology to reduce power consumption and increase energy efficiency
- Thermal control and energy efficiency are driving design challenges
- AMD is addressing these challenges with new transistor designs, materials and design innovations that boost performance and energy efficiency while controlling thermal output
 - Smaller line-widths
 - Dual-core technology
 - Silicon-on-Insulator (SOI) technology
 - Strained silicon capping films on transistors (dual stress liner technology)
 - AMD64 technology
 - HyperTransport™ interconnect technology
 - AMD PowerNow!™ and Cool'n'Quiet™ power management
 - Integration of large, high-performance on-chip memory cache

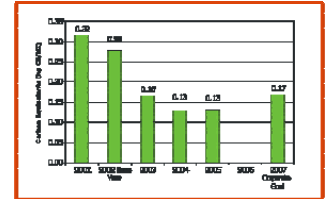
Voluntary Climate and Energy Initiatives – Manufacturing and Operations

- AMD Joined **CLIMATE LEADERS** in 2002 and announced goal in 2004
- **GREEN POWER LEADERSHIP CLUB**
 - AMD Austin is **8th largest** private U.S. user of renewable energy (June 2006)
 - AMD's new Austin campus will use **100% GreenChoice®** power from **Austin Energy**
- AMD received EPA's **GREEN POWER LEADERSHIP** Award in 2002
- Founding member of SIA/EPA **PFC REDUCTION PARTNERSHIP** for the Semiconductor Industry
- AMD participates in ESIA and German **MEMORANDUMS OF AGREEMENT** for PFC emissions reduction



Focus on Goals and Manufacturing

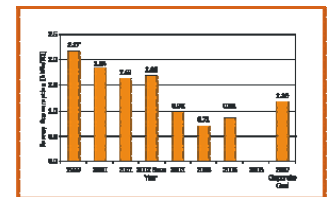
- Normalized Greenhouse gas emissions** will be reduced 40 percent by year end 2007.
 [2002 baseline; expressed as Carbon Equivalents (CE)/Manufacturing Index (MI)]



- Absolute PFC emissions** will be reduced 50 percent by 2010.
 [1995 baseline; expressed as CE]



- Normalized Energy use** will be reduced 30 percent by year end 2007.
 [2002 baseline; expressed as kWh/MI]



Wafer Fabrication Facilities Included in AMD Goal-Setting: 2000



Fabs 14, 15, and 25
Austin, TX
Flash Memory
200 mm and 150mm
wafers



Fab 30
Dresden, Germany
Microprocessors
200 mm wafers



Submicron Development Center, Sunnyvale, CA
Logic and Memory R&D
200 mm wafers

Wafer Fabrication Facilities included in AMD Goal-setting: 2004



Fab 25
Austin, TX
Flash Memory
200 mm wafers



SDC, Sunnyvale, CA
Logic and Memory R&D
200 mm wafers



Fabs 30 and 36
Dresden, Germany
Microprocessors
200 mm and 300 mm
wafers



JV-3 (Takaku)
Aizu-Wakamatsu, Japan
Flash Memory
200 mm wafers



JV-1 and JV-2 (Monden)
Aizu-Wakamatsu, Japan
Flash Memory
200 mm wafers

Wafer Fabrication Facilities Included in AMD Goal-Setting: 2007



**Fabs 36 and 38
(conversion of Fab 30)**
Dresden, Germany
Microprocessors
300 mm wafers



Fab 4X
Malta, New York
Microprocessors
300 mm wafers
(construction and ramp
schedule to be determined)

AMD in Dresden: Fab 30, Fab 36, DDC



AMD Fab 30 – 200mm

- Employees: ~ 2,000
- Investments since 1996: USD 2.4 Billion
- Clean Room: 14,000 m²
- Manufacturing Capacity: > 25,000 Wafer starts / Month
- Technology: 90 nm (SOI and Copper)
- To be converted to 300mm "Fab 38"

AMD Fab 36 – 300mm

- Planned number of employees: 1,000
- Expected Investments through 2008: USD 3.1 Billion
- Clean Room: 13,400 m²
- Manufacturing Capacity: 13,000 Wafer starts / Month
- Technology: 90, 65, 45, 32 nm

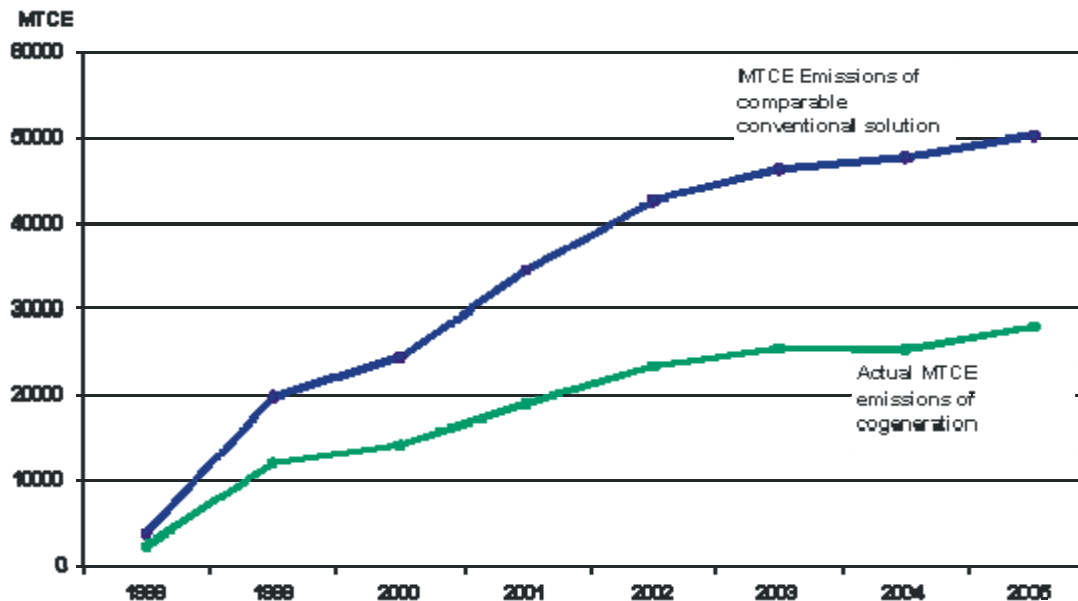
Dresden Design Center

- Employees: ~100
- Customer Centric Product Innovation for Computing Products

Focus: Leadership in Use of Green Energy Sources

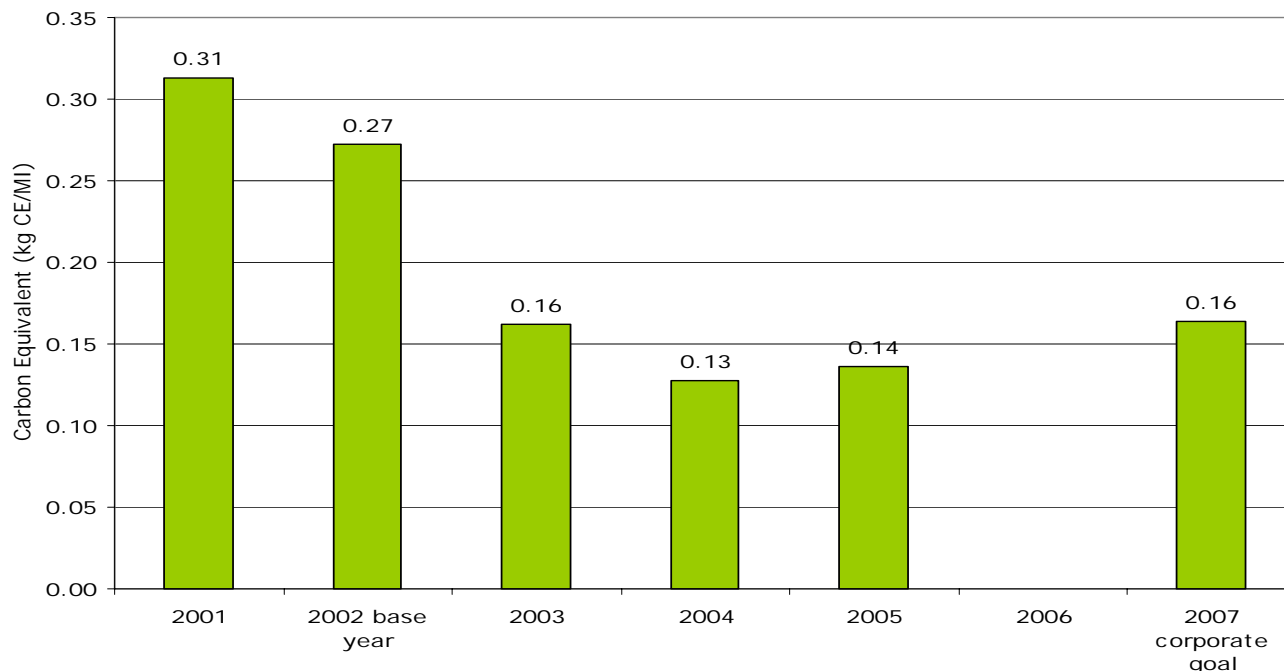
- **Dresden Cogeneration**

- Natural gas fueled cogeneration technology for electricity, heating, and cooling is 30 to 45 percent more efficient than conventional systems
- Achieve operating efficiencies as high as 73 to 86 percent
- EVC I facility has avoided more than 115,000 MTCE of greenhouse gas emissions compared with a conventional energy supply



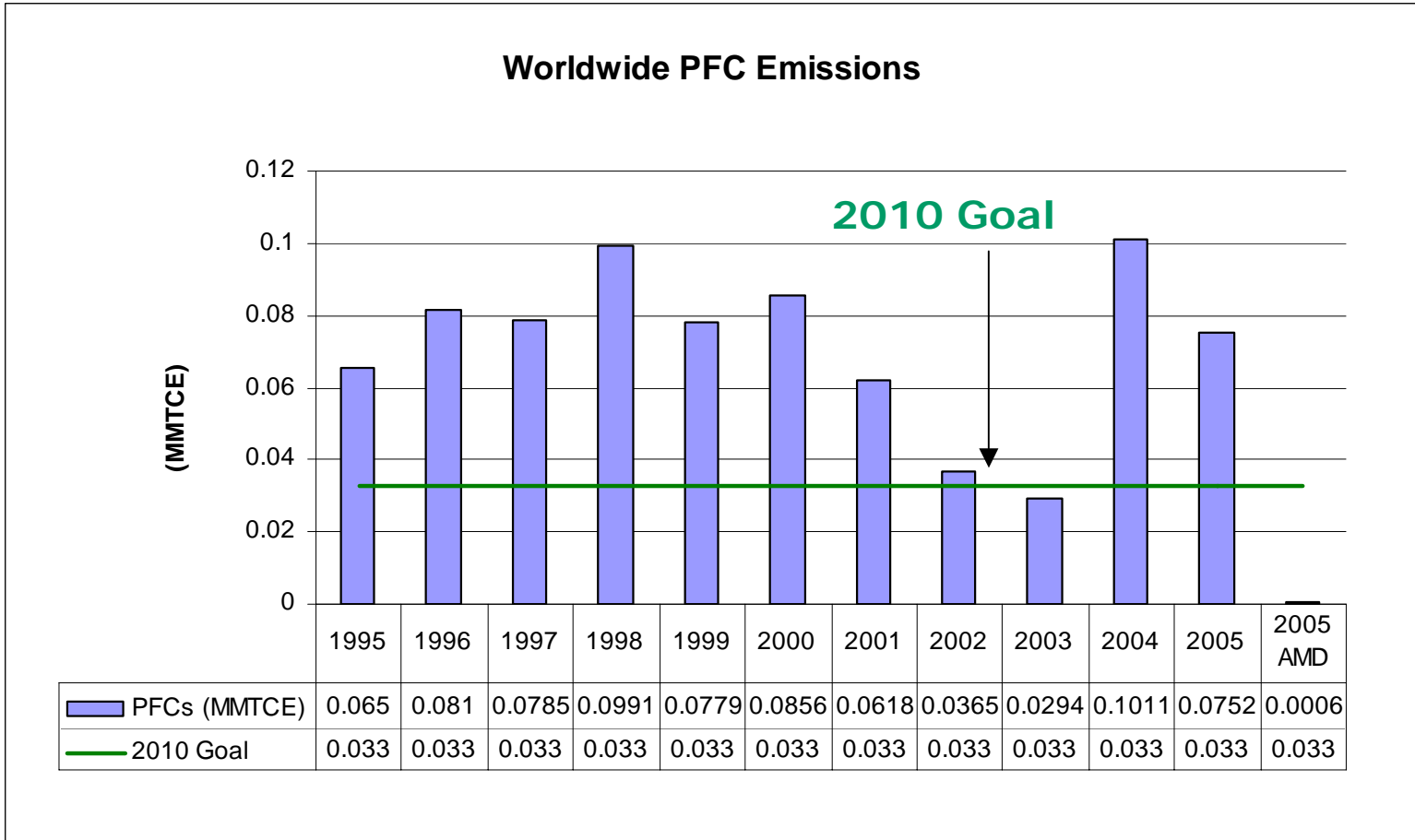
Greenhouse Gas (GHG) emissions

NORMALIZED WORLDWIDE GREENHOUSE GAS EMISSIONS



AMD's EPA Climate Leaders Goal: 40% reduction in carbon-equivalent Greenhouse Gas emissions by 2007 relative to 2002 baseline normalized to Manufacturing Index (MI) (square inches of silicon x masking layers)

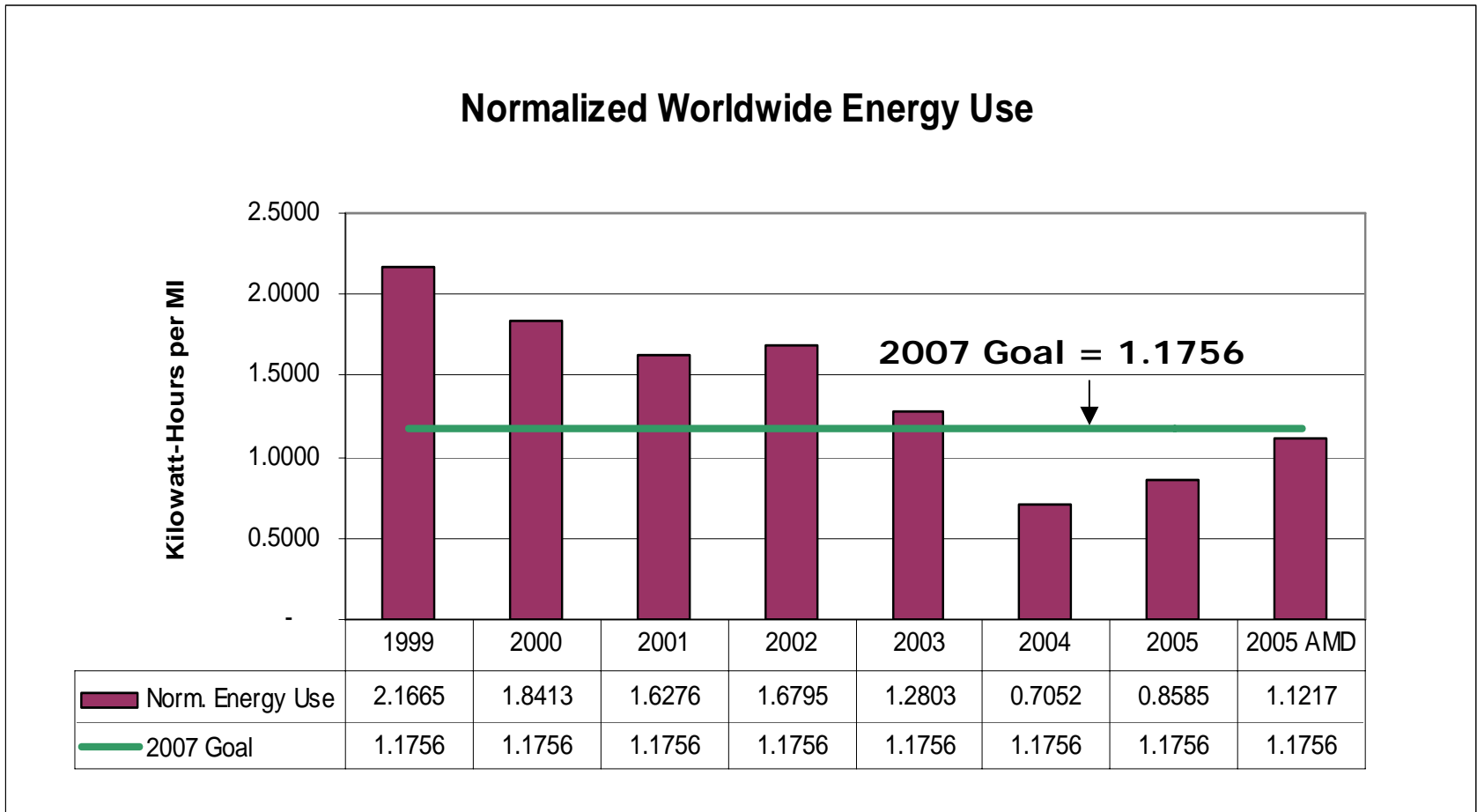
Absolute PFC Emissions



Absolute PFC emissions will be reduced 50 percent by 2010 (1995 baseline; expressed as Carbon Equivalents)



Normalized Energy Use



Normalized Energy use will be reduced 30 percent by year end 2007.
(2002 baseline; kWh/MI)

Strategic Challenges for GCPP 2007

- Reassess Long-term Goals
 - 40% normalized greenhouse gas reduction goal (2002-2007) has been achieved and normalized emissions will decrease as Fab 36 increases production
 - 50% PFC reduction goal (1995-2010) was met for operations within original scope and emissions from current and future fabs are low
 - The 30% normalized energy use reduction goal (2002-2007) has also been met and normalized energy use will decrease as Fab 36 increases production
- Establish new goals for AMD, considering pending merger with ATI and projections for future manufacturing capacity

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