



## CalPERS AIM Clean Energy & Technology Program

2008 Environmental Measurement Results



ENVIRONMENTAL CAPITAL GROUP  
We measure the results you value.

PCG ASSET MANAGEMENT, LLC



CalPERS' leadership in the clean energy and technology sector is producing meaningful environmental results that are being identified and quantified as a part of the industry leading AIM Clean Energy & Technology Program.

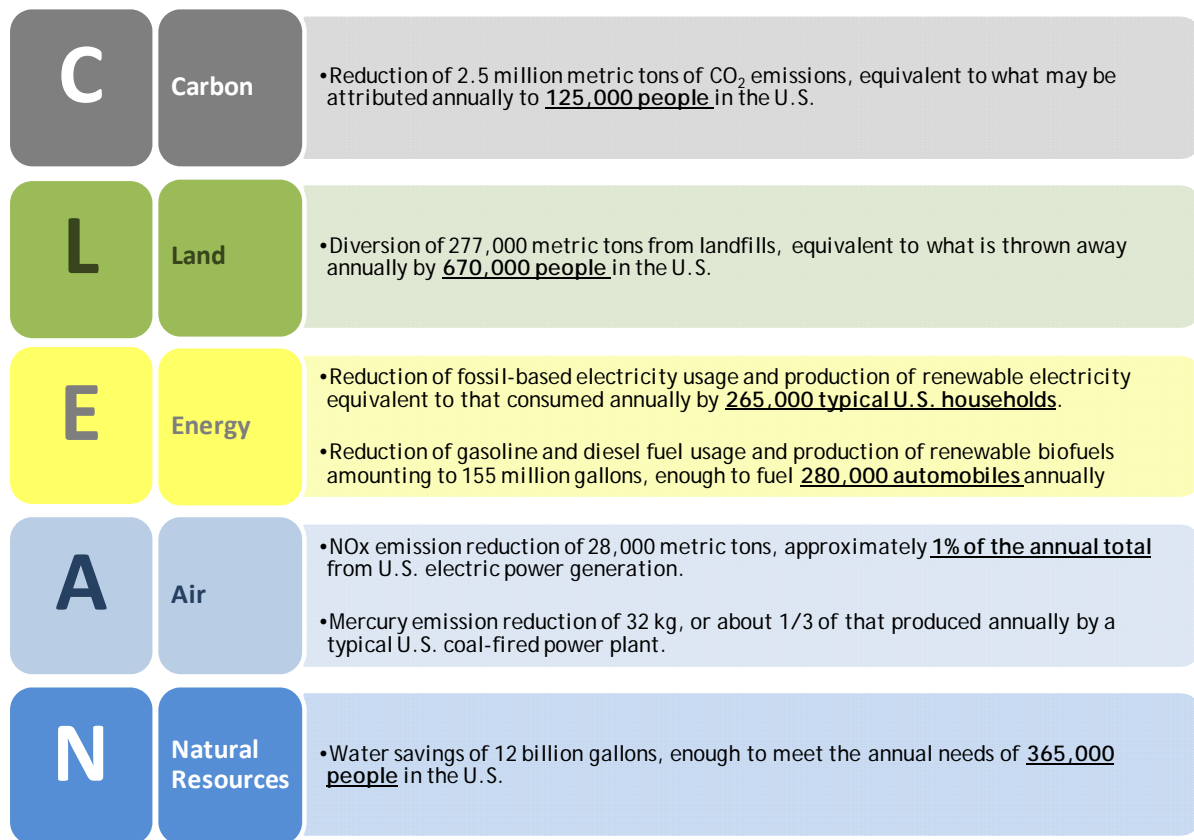
Under the direction of the Investment Committee, the CalPERS AIM Program launched the Clean Energy & Technology Program in 2004. This program, through two distinct phases, now has \$680 million in commitments. The primary objective of the Program is to generate attractive, risk-adjusted long term financial returns, meeting or exceeding traditional private equity benchmarks. As ancillary benefits, the Program seeks to generate measurable environmental benefits, stimulate employment, and catalyze the adoption of clean energy and technology solutions in the broader market place.

## Overview and Summary

This report continues the annual examination of the environmental benefits derived from the CalPERS AIM Clean Energy & Technology Program for the year ended December 31, 2008. CalPERS, through its commitment to measuring and reporting the net environmental benefits created by its investments, has identified as a priority the evaluation of the efficacy of the Program’s portfolio. This Program is fostering a growing understanding of the value of such measurement in the investment community. We also see an increased sophistication within the investment funds and portfolio companies in selecting and analyzing appropriate business metrics that can be used to quantify environmental benefits.

The environmental benefits of the Program are grouped into five categories using the framework CLEAN™, representing Carbon, Land, Energy, Air, and Natural Resources. As of the end of 2008, the Program had investments in 18 private equity funds and 9 co-investments, resulting in a total of 135 underlying portfolio companies. These companies produced material environmental benefits in 2008 as summarized in Figure I below.

**Figure I: 2008 Summary Environmental Benefits & Equivalents**



Almost half of the companies are still pre-commercial and therefore have not yet contributed quantitative environmental benefits. Nonetheless, over 90% of the companies are classified as either “restorative” (products and services that reverse environmental damage), “sustainable” (energy and other outputs produced with very limited environmental impact), or “more efficient” (products and services that mitigate environmental damage by using resources more efficiently). Therefore, the vast majority of the portfolio companies are expected to improve environmental conditions around the globe upon commercialization.

See Page 16 for all source references.

## Environmental Benefit Measurement

Environmental Capital Group (ECG) has developed an innovative method, in conjunction with PCG Asset Management (PCGAM), for measuring and quantifying the environmental benefits of underlying portfolio companies. This method involves qualitative work before fund investments are made, as well as ongoing quantitative analysis and monitoring at the portfolio company level.

### Pre-investment Environmental Due Diligence

Before an investment is made, ECG conducts detailed environmental due diligence to determine whether an investment is likely to yield material net environmental benefits. This evaluation is conducted in tandem with the due diligence performed by PCGAM.

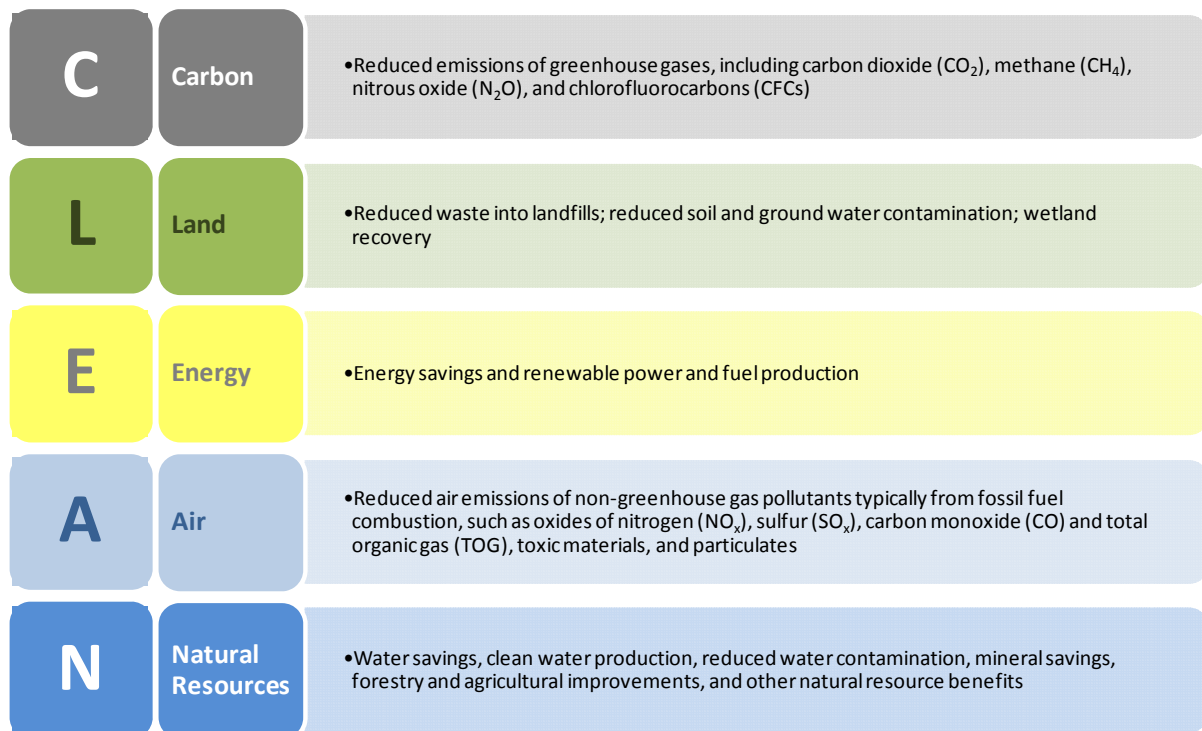
### Post-investment Analysis of the Program's Environmental Impact

After investment, ECG works with each general partner to establish a model that converts business results into the associated environmental result for each portfolio company. For example, product units sold or material volume processed is converted to metric tons of emissions avoided or gallons of water saved. ECG assesses improvement or net environmental benefits by comparing the positive and negative environmental impacts of the "new" technology to the baseline technology in common use. Business results are collected annually and used to quantify actual environmental benefits.

### CLEAN™ Environmental Investment Benefits

For 2008 we are introducing a reporting framework that compiles diverse environmental benefits into a simple yet comprehensive summary: CLEAN™ Environmental Investment Benefits, shown in Figure II.

Figure II: CLEAN™ Environmental Investment Benefits



The environmental benefits created by this program include resource savings and emission reductions, with the key environmental benefit being the reduced use of fossil-based energy through improved efficiencies or replacement by renewable sources. Reduced use of fossil energy is directly linked to reduced emissions of greenhouse gases and other pollutants, so portfolio companies that produce energy savings or clean energy will also produce emission reduction benefits. Water savings come both from companies that directly save water (smart irrigation, etc.) and as a result of reduced electricity production (which requires significant amounts of water).

ECG uses U.S. Department of Energy data to account for the air emission reductions associated with renewable electricity production or reduced use of electricity in the U.S., based on the weighted average of the emissions from all electricity production.<sup>1</sup> Country-specific emission factors are used for renewable power produced in other countries.<sup>2</sup> U.S. Environmental Protection Agency and California Air Resources Board data are used to calculate emission reductions from gasoline and diesel transportation fuel savings.<sup>3,4</sup> Other sources are used to account for emission savings for particular technologies, such as using biomass to generate power; a particularly useful source is the California Climate Action Registry.<sup>2</sup> A table of the standard factors used for 2008 to calculate implied environmental benefits is in the Appendix.

## **2008 Environmental Results**

The 135 portfolio companies evaluated as of December 31, 2008 fall into a broad group of clean energy and technology business sectors that are expected to produce significant environmental benefits over the life of the investments. The environmental benefits created by the program can be considered both in terms of actual results in the past year and long-term expected results if the technologies are successfully commercialized. Assessment of future benefits helps paint a complete picture of the environmental impact because almost half of the companies are pre-commercial and produced no benefits in 2008.

### **Environmental Investment Classes**

For 2008, we updated the classification of the realized and potential environmental impact of each company using the categories in Figure III. Most of the companies can be classified as Class II: Sustainable (e.g., solar, wind, geothermal, and biomass energy production, etc.), or Class III: More Efficient (e.g., building and transportation efficiency, energy and power efficiency, water savings, etc.). Both make important contributions to overall environmental improvement. Over 90% of all the companies are in Class I, II, or III, and are therefore expected to improve the environmental conditions around the globe upon commercialization. The net environmental impact of renewable fuels is an active focus of ECG, university, and government research. The process we used to classify renewable fuel companies is described in the Appendix.























