

## Develop Renewable Energy Cheaper Than Coal (RE<C)

### Introduction

In the fall of 2007, Google launched an initiative called “Renewable Energy Cheaper than Coal” or RE<C. The decision to pursue this initiative reflects the strong commitment of Google founders Larry Page and Sergey Brin to help realize the promise of renewable energy. The goal of RE<C is to make electricity produced from renewable sources cheaper than electricity produced from coal. To really motivate our team, and measure our results, we have set a more specific objective: Google will develop one gigawatt of renewable electricity generating capacity – enough to power a city the size of San Francisco – that is cheaper than coal. And we want to accomplish this in years, not decades.

### Why RE<C?

Because it's cheap, coal is the predominant source of both existing and new electricity capacity worldwide. And the greenhouse gas emissions produced from coal burning are a major contributor to global climate change, our greatest environmental challenge. However, today renewable electricity costs too much to compete with coal. Making electricity produced from renewable energy cheaper than coal, at utility scale, would be a key part of reducing global climate change. But it is an expensive undertaking. As a result, renewable electricity has barely made a dent in global or U.S. capacity or usage.

For decades talented people have been working to lower the cost of renewable energy, and there has been great progress. But we face a simple economic reality: whether for cars, computers, hamburgers or electrons, price matters. And even though they're attractive, green electrons simply cost too much today to compete with coal. As a result, the percentage of global electricity powered by renewables has actually decreased in recent years. RE<C addresses this disparity – and could become an important tool in confronting the climate crisis.

We believe there are two funding gaps in renewable energy today, and we will look for opportunities to bridge them:

**Research and Development.** While government and university-supported research has contributed a great deal to the development of renewable energy, there has been inadequate funding, and the focus has often not been on moving technologies toward the market place.

**Early utility-scale funding.** There is insufficient development of early high-risk commercial-scale clean energy projects, which are risky for traditional investors. This period of early funding, before a technology becomes commercially viable, is known as the “Valley of Death.”

## Why Google?

Why is a company largely focused on Internet search and advertising getting into the renewable energy business?

- We are committed to helping create a clean energy future – doing our part to halt climate change and one day power the U.S. and the globe with renewable energy.
- We work hard to be a responsible corporate citizen and we are serious about reducing our environmental footprint. As part of our commitment to carbon neutrality, we try to use renewable electricity to power our operations wherever possible. But at many locations we have not been able to find large-scale cost-competitive supplies of renewable electricity. We hope that this initiative will enable us to use renewable electricity to power Google's operations.
- We have a talented group of engineers who are enthusiastic about tackling complex and important challenges.

But we certainly don't have all the answers - or even know all the questions - to making renewable electricity cheaper than coal. We simply want to add our enthusiasm and resources – both human and financial – to address this global imperative.

## What's the RE<C Plan?

RE<C is a work in progress. Here's what we know today:

- We will focus initially on three areas of renewable energy that have the potential to produce large amounts of electricity cheaper than coal: solar thermal, advanced wind technologies, and engineered geothermal systems.
- We are creating a renewable energy R&D group within Google's engineering ranks and are hiring talented engineers, technologists, energy experts and others.
- We are making investments in promising technologies.
- We are working on our own renewable energy projects to power our facilities and demonstrate innovative technologies.
- We are supporting policy measures and using Google's information tools to help advance renewable energy.
- We will link our RE<C initiative to our RechargeIT initiative to enable millions of hybrid electric and all-electric vehicles to plug into a green grid.
- We expect to spend tens of millions of dollars on R&D related to renewable energy in 2008. Over time, we anticipate investing hundreds of millions of dollars in breakthrough renewable energy projects which generate positive returns.