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## **Moving Toward Zero Energy Buildings**

When I began discussing the idea of Zero Energy Buildings in the mid-1990s, I received sceptical looks and laughter. Today, we are seeing the concept blossom into a large number of buildings throughout the world that are net zero fossil fuel buildings. I use the term zero energy buildings to mean “buildings that are extremely energy efficient and produce enough of their own power that, over the course of a year, they produce as much as they need to operate.” Some may call them zero emissions, eco-buildings, green buildings, solar buildings. I don’t quibble with a definition. The important thing is we are seeing more and more buildings moving toward zero energy.

At the Department of Energy, we have embraced the concept of Zero Energy Buildings to serve as a common goal for all that we do. Building codes, labeling programs, lighting research, solar and geothermal heat pumps are all part of a bigger goal: zero energy buildings. To achieve them, we need the world’s best energy efficiency components (lighting, insulation, windows, heating, cooling, appliances, etc) and systems integration to optimize the performance of the building. Then we need the best renewable energy technologies that can be incorporated into buildings: solar, small wind, and geothermal heat pumps (some day hydrogen storage).

I see the day when every building will be a power plant, not just providing enough energy for its own use, but serving as power plants for the neighborhood. This leads to the next logical step, Zero Energy Communities. With buildings as power plants, we can add industrial energy efficiency and utilization of all resources. Instead of hauling garbage to a landfill, we put it in local bio-refineries for transportation fuels. When we adopt the Bill McDonough mantra, “Everything is a resource, Nothing is waste,” we can achieve the ambitious goals of Zero Energy Buildings and Zero energy Communities.