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# SUSTAINABLE COLORADO

## The oil price crisis: Unleashing American ingenuity

Volatile oil prices have been dominating the news lately, underscoring growing unease about the automobile's heavy dependence on petroleum. As these concerns reverberate from Main Street to Wall Street, the impact on the United States as well as the world economies has been profound.

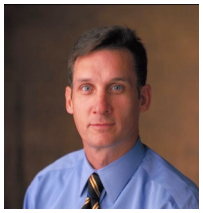
But the good news is that in our new century there is a great opportunity for American ingenuity to step into the breach and create a new energy paradigm to lead the world forward into a greener future. And the indications are that this is already happening.

### Transportation transformation

What will we see in the world of transportation in the coming years?

- **More vehicle choice.** Europeans have a far greater choice when it comes to the cars they drive, especially in the smaller car arena. Expect the American market to adapt in short order. GM is now actively working toward new solutions that will answer the growing demand for personal transportation in an affordable and sustainable way.
- **The natural gas alternative.** Natural gas is enticing because it is abundant, affordable and relatively clean. Recently the Congressional Select Committee on Energy Independence and Global Warming listened to testimony on the role natural gas can play in our nation's transportation sector.

In the near term, we can use compressed natural gas (CNG) in internal combustion engines. Mid-term, we can leverage natural gas to create electricity for the Volt and future variants. In the long term, natural gas could be an excellent source for making hydrogen for fuel cell vehicles, either at the filling station or in people's homes.



John Robbins

GM already has extensive experience with natural gas vehicles. Our Opel Zafira CNG is among the leaders in Europe, where gasoline and diesel fuel are costly, and we are exploring a dual-fuel approach with natural gas and gasoline for U.S. customers. While we are not ready to commit to a future production plan, we are taking a serious look at natural gas in the United States as yet another way to diversify our portfolio of affordable and sustainable transportation energy solutions.

- **Much greater emphasis on public transportation.** Cities like Denver and Portland had already mandated extensive light-rail projects, even before this latest energy crunch. Expect this trend to continue.
- **Electric, bio-fuel or hydrogen?** Expect major advances in all of these exciting alternative energy areas in the years ahead.

### Green and sustainable building and living

This is an arena in which American innovation will really come into play. Even now, LEED certification has become the standard for office buildings in many business centers. Energy efficiency and green materials and methods, while already being employed, will give way to super-low impact technology over the next few years. Some examples of things on the way:

- **Turn down your furnace without turning up your air conditioner.**

Imagine this: On cold, clear days, the interior of your office building receives free heat from the sun. On hot days, this heat is reflected away. What's more, your building exterior offers superior insulation properties at all times, in all weather, to keep the heat and cold where they belong. This technology is already here and being harnessed.

- **Buildings off the grid?** Yes, according to Eliot Boyle, CEO of US Metals in Denver. Boyle's company is the only company in the Intermountain West that can laminate thin-film photovoltaic solar panels directly onto its metal roofing panels to create a truly integrated solar-energy solution for the structures that it protects from the elements.

Boyle says solar panels will be getting much more energy-productive (more power from the sun) and less expensive over the next 10 years or so, as greater demand in turn leads to much greater manufacturing output — mainly from China. Hence, solar power for individual buildings will become much more common and perhaps, standard, within 15 years.

- **Modular everything.** With building material refuse choking our landfills, office building interiors will soon be all modular — that is, able to be moved around at will according to different interior configurations.

Nowadays, many new LEED-certified buildings are employing modular interiors that use under-floor air (much more efficient and adaptable) walls that can be moved and include electrical and network cabling and recycled carpet squares that can be installed and re-installed much more easily.

Such a modular approach is highly attractive for the ongoing profitability of a building in that future tenant improvement simply requires moving walls to meet differing configuration needs. Demolition becomes unnecessary.

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And, lastly …

Expect to see the resurgence of nuclear power as a cost-effective, safe and efficient way to meet the electricity demands America will need in the next 20-30 years. Clean coal also will find a way to be cost-efficient, but nuclear technology is again being talked about around America.

The French are the only world power that invested in nuclear technology over the last two decades, which has proven itself to be safe and effective.

**JOHN ROBBINS,** co-founder and managing partner of Engineered Interiors Group, can be reached at jrobbins@pearcom.com.