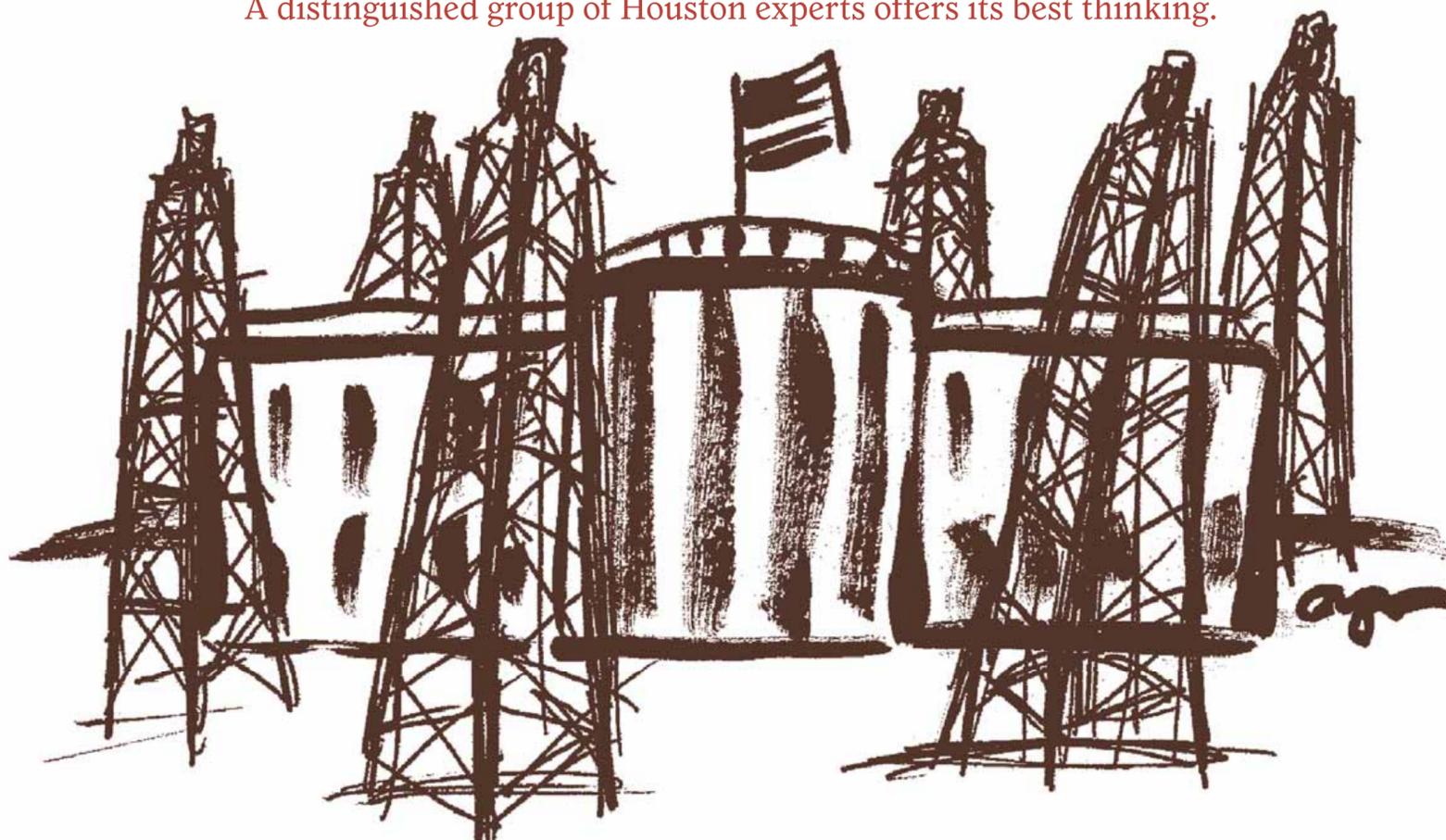


Real urgency about energy

When our new president arrives in the Oval Office next January, energy will be near the top of a long list of issues demanding presidential attention. A distinguished group of Houston experts offers its best thinking.



BE BOLD

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We won't get there by tinkering

By AMY MYERS JAFFE

LEADERSHIP in the White House is about to change, and with that change comes the possibility of a smarter energy policy.

There was a time when one could tell who was a Democrat and who a Republican by asking what the candidate's position was on energy and global warming. Today, such distinctions are blurred. All three front-running candidates — John McCain, Hillary Clinton and Barack Obama — have an articulated energy policy that includes continuing to raise the corporate average fuel economy (CAFE) standards for American automobiles. All three support legislation to curb U.S. emissions of greenhouse gases.

There is no question that improved efficiency standards are a step in the right direction. The Energy Independence and Security Act of 2007 will raise automobile fuel efficiency standards to 35 miles to the gallon by 2020, with first improvements required in passenger fleets by 2011. According to Baker Institute calculations, this could reduce U.S. oil

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BE THE LEADER

U.S. needs to show the world the way

By MATT SIMMONS

IF I were preparing a briefing for the president-elect on urgent energy actions needed in the administration's first 30 days, it would read as follows:

■ **Be prepared for peak oil and gas.** While the data is still imperfect, there is a high risk that global use of oil and gas is now at or beyond a sustainable level. While demand for both key fossil fuels still rages ahead, new supplies are struggling to grow fast enough to offset rising production declines from old (and very old) oil and gas basins.

For two decades, the number of exploration discoveries has declined and the size of the average new discovery also has shrunk. For the sake of the global economy, the United States needs to assume the leading role in guiding the world's key oil consuming nations to a rapid change in the intensity of how we now use oil and gas.

It is impossible to predict any precise timing of when peak supply will be reached, nor the duration this peak output will stay at an "undulating plateau" before then going into what

Simmons heads Simmons & Company International, which has provided investment banking services to the energy industry since 1974.

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BE REAL

Drop fantastic notions of independence

By JACQUELINE LANG WEAVER

THE search for solutions to our energy challenges leads to one inescapable conclusion: There are no easy answers.

Regardless of who sits in the Oval Office next January, the reality is that world oil prices will never return to the "good old days" of the 1990s.

Domestic oil production reduces reliance on foreign sources, but our oil production peaked decades ago. Competing studies and conflicting expert opinions differ about the precise date of "global reckoning" — the year when conventional world petroleum supplies peak — but no one denies that day is approaching. Rather than worrying about whether "peak oil" will arrive in 2012 or 2032 (either way, it's right around the corner for our children and grandchildren), our next president should focus the incoming administration on some basic energy realities.

He or she should start with dropping "energy independence" from the lexicon of the Oval Office. The United States consumes a quarter of the world's petroleum, and it is unrealistic and misleading to suggest that we can sustain our consumption from domestic

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BE GREEN

Environment merits a place in our policy

By VICTOR FLATT

RATHER than energy surprises, our next president knows exactly what he or she can expect upon taking office: familiar refrains from the electorate about improving energy security, expanding energy supplies and lowering the cost of power and the goods it produces.

These populist concerns have framed our national debates on everything from Middle East involvement to concerns about the rise of China and other developing countries and the search for fossil fuels in ecologically sensitive areas.

If an energy surprise awaits, perhaps it will take shape in a new administration that breaks with tradition and forcefully commits to building energy policy around substantive environmental issues. In 2008, it is no longer possible to deny that finding, producing and exploiting fossil fuels is inextricably linked with the environmental health of our planet and ourselves.

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EDITORIAL

Act now

10 things the nation must do to avert an energy shortage (and protect the planet). **PAGE E2**

CHINA'S CHANGES

Avoid 'First Colonization'

Steer Chinese away from the suburban, automobile-dependent lifestyle. **PAGE E4**

SMALLEY VISION

Imagine energy abundance

The late Rice Nobel Prize-winner had a plan to solve our dilemma. **PAGE E5**

POWER PLAY

The nuclear advantage

Next president should boost once-shunned power source. It's safe and green. **PAGE E6**

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CHINA'S CHANGES

Beware 'First Colonization'

■ Steer the Chinese from suburban, driving culture

By STEVEN LEWIS

TENS of millions of Chinese urbanites are living in gated communities. Advertisements for new suburban homes dominate Chinese subways and outdoor billboards, a phenomenon virtually nonexistent 10 years ago.

Polling conducted by Rice University's Shell Center for Sustainability's Coastal Cities project shows that almost as high a percentage of Chinese urbanites from Shanghai, Shenzhen and Tianjin are as worried about traffic congestion, air pollution and quality of schools as Houstonians.

This "First Colonization" of China has huge implications for global energy markets. Already, Chinese oil demand has risen from 116 million tons in 1990 to 327 million tons in 2005.

Baker Institute research shows that as per capita income rises between \$5,000 and \$12,000, vehicle stocks per person in a developing nation can increase by as much as a factor of 20. This correlation is important because many nations, including China and India, are seeing per capita income increases to this critical "launching point" for car ownership.

Per capita primary energy use in the developing world remains markedly lower than the industrialized West, with India's total primary energy consumption per person averaging roughly 0.38 tons of oil per person in 2006 and China's at 1.29, compared to the U.S. average of 7.79 tons of oil per person and Germany at 3.98. In recent years, growth in private vehicles in China has averaged more than 23 percent annually.

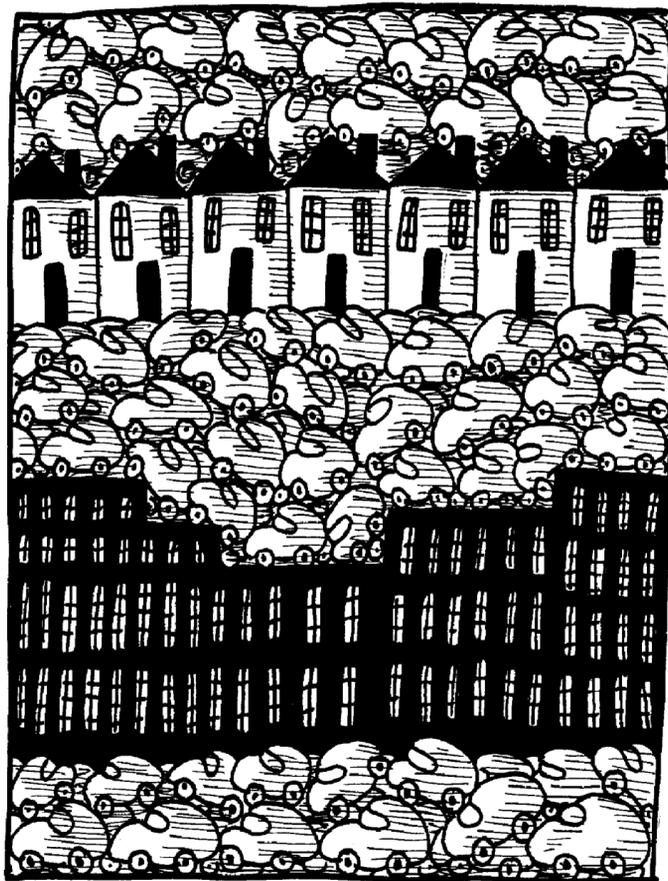
The challenge of restraining demand growth for fossil energy will be a monumental one. Americans own more than 242 million road vehicles, nearly a vehicle for every person in the country, and we travel 12,000 miles per vehicle each year. We are 5 percent of the world's population, but we use more than 33 percent of all the oil consumed for road transportation in the world. By comparison, China, even with its growing economy, has only about 13 million vehicles on the road so far and consumes only about 5 percent of all the road fuel produced in the world — despite having a population that is more than four times the size of the United States.

Driving is part of the American way of life, and now China is increasingly adopting this lifestyle of freedom and mobility. This situation is causing many to ask: How will we meet all this new demand for oil?

The Chinese government recognizes the challenge. Although U.S. standards for fuel economy are stricter for lighter vehicles — small cars — Chinese standards are more aggressive in curbing heavy vehicles, including SUVs, and there are plans to tighten all standards in the future.

But the private car/suburban commute genie is out of the bottle in China's major cities, and the challenge of this for both the United States and for China will be great. China's government can ill-afford to deny the growing middle class the personal mobility it desires.

The newly gained freedom to travel, to sojourn, to explore is one of the hallmarks of the PRC's "economic reforms with



MARGARET SCOTT

Chinese characteristics," and undoubtedly a major source of legitimacy in the eyes of the increasingly influential middle class.

The U.S.-China bilateral agenda is a crowded one, but certainly the Middle East and energy policy needs to be moved higher up on the list of topics for high-level meetings.

So far, U.S.-China energy cooperation is handled at a technical level. Political escalation of dialogue would have definite benefits. One idea is to have such a dialogue led by the U.S. vice president, much the way Al Gore and Viktor Chernomyrdin discussed U.S.-Russian energy cooperation in the mid-'90s, paving the way for U.S.-Russian joint investment in major energy projects. Another possibility is to appoint a senior U.S. diplomat with energy experience to serve in a new post as an energy diplomacy liaison to Beijing to jump-start more proactive and ongoing policy coordination and new energy initiatives between the two countries.

The U.S. Department of Energy should also work to expand its excellent programs on joint research on clean coal and energy efficiency technologies, and U.S. universities should look for similar opportunities for collaborations. The U.S. Department of Commerce should also consider organizing a major bilateral strategy conclave between U.S. and Chinese car makers to bring attention to

the need in both countries for more efficient vehicle design.

Finally, associations of U.S. mayors and governors should consider engaging local government officials in major Chinese cities to hold regular bilateral "local government to local government" discussions about urbanization policy, planning best practices, conservation techniques and promotion of alternative fuels.

In China, local governments are the main entities pursuing these energy and sustainability policies, and yet their interest and knowledge cannot be captured adequately in national bilateral meetings.

The push to the suburbs in China can certainly be viewed as a threat, but it could just as easily be treated as an opportunity. Americans and Chinese have the same interests and a common stake in finding solutions to the energy and climate problem, given large coastal populations and growing congestion in major cities. Energy supply concerns don't have to be a zero-sum between the American and Chinese automobile driver. With effective public policy and technology innovation, it can be a win-win.

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BOLD: We need an array of policies

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demand by about 2.3 million barrels a day by 2020 from what was previously projected, assuming the average rate of vehicle purchases seen in recent years applies. But it is a reduction from a projected increase, and 300,000 barrels per day too little to hold U.S. gasoline demand flat at 2006 levels.

Detroit could do more. If, for example, every new car after 2015 achieved 50 miles to the gallon, fuel consumption would be 7 percent lower in 2020 than it is today. Sen. Clinton would like to see 55 miles-per-gallon standards reached by 2030; Sen. Obama 52 miles per gallon by 2026. John McCain talks about "appropriate and achievable" improvements but isn't specific.

But while efficiency standards are a great tool to reduce U.S. energy demand, we clearly need to look beyond that, given the magnitude and urgency of the problems facing

Clinton backs the creation of a \$50 billion energy fund to support investments in alternative energy. She also supports adding 100,000 plug-in hybrid electric vehicles to the federal fleet by 2015 and \$2 billion in research and development to reduce the cost and improve the longevity and durability of batteries. I like that.

Plug-in hybrids are a building block to a transition to a more fuel-diversified transportation sector — one that could be weaned off carbon-based fuels (read Middle East supply) over time as we improve our electricity network. Imagine: Hugo Chavez cuts off the oil we need to fuel our cars and instead of standing in long gasoline lines and cursing our government and Big Oil, we simply opt to charge up by plugging in our cars at home.

The United States generates 98 percent of its electricity today without recourse to oil, tapping instead a wide variety of other fuels (coal,

Imagine: Hugo Chavez cuts off the oil we need to fuel our cars and instead of standing in long gasoline lines and cursing our government and Big Oil, we simply opt to charge up by plugging in our cars at home.

nuclear, hydro, natural gas, renewables). There's potential to that. Combined with a plan to phase out the use of coal over time or to clean it up, moving the transportation system to an electricity basis holds promise. Even Big Oil could eventually like that idea, as it

has invested heavily in developing cleaner natural gas resources worldwide as its access to the oil resources controlled by national oil companies has dwindled.

Clinton's science-based plan would also enhance U.S. competitiveness over the long run. Our nation faces a crisis in the quality, perhaps even the size, of its science and engineering work force, which is vital to the nation's energy future as well as our prosperity and security.

Our current energy predicament requires a bold new energy science and technology program. With visionary leadership at the highest levels of government, and sound national science, technology and energy policies to match, larger numbers of talented and motivated young people might well find the world's energy challenge sufficiently compelling to attract them into careers in science and engineering.

That would put the U.S. future on a brighter footing and ensure our economy remains the vibrant center of global prosperity and innovation that it is today.

LEADER: It's time to wake up from our energy illusions

CONTINUED FROM PAGE E1

could be a steep decline. Hence, the world's leaders need to assume we have no more than three to five years to make a transition to a post-peak oil and gas world.

A global energy summit needs to be convened by the end of the first month of the new presidency. At this summit, mandates must be instituted for how key stakeholders will begin reducing their use of oil and gas in ways that make a significant impact on this pending crisis.

■ **Revamping our electricity grid.** Another U.S. energy crisis looms just over the horizon. America's electricity grid is nearing full capacity in many fast-growing parts of the country. New coal-fired power plant additions have ground to a halt, due to carbon concerns and climate change worries. The time to build new nuclear plants is still measured in a multiple number of years. North America strains to supply our nation's current natural gas-fired power plants. It takes too long to build even liquefied natural gas receiving terminals. In a looming gas-scarce world, we should not use this precious natural gas supply as a feedstock for electricity — it is too inefficient a use of scarce gas. Finding solutions to this pending problem, absent running the country by brownouts and blackouts during peak electricity use, will also take emergency efficiency measures and a fast growth in wind and solar energy.

■ **Fighting rust: How we rebuild our energy infrastructure.** Compounding our energy problem is the age and state of our nation's energy infrastructure, which is now too old and far too rusty. We need a widespread rebuilding of our pipelines and gathering systems, our tank farms, refineries, drilling rigs and much of our electricity grid. Tax incentives are needed to spur this construction, which must be tackled by the private sector but with careful oversight by the government.

■ **Transforming a graying energy work force into a younger work force.** As an unintended con-

sequence of a two and a half decade energy depression, few young people are entering the energy industry. Today, a high percent of the industry's skilled and unskilled energy work force is too old and will soon retire. A national emergency needs to be declared to begin a classic "Uncle Sam Needs You" job search so that the qualified personnel are in place to get these challenging energy issues addressed. A job training initiative with the same vigor as America's race to build a war machine for World War II needs to be a key initiative in our first 30 days.

■ **Leave no "supply source" stone unturned.** There are no new sources of energy supply that can quickly be brought into use to relieve this pending energy squeeze, but every supply source helps, and no new supply source is too risky or too small. Everything that can safely work and last for more than a two- to four-year time frame needs to be inventoried and developed as soon as possible.

These are the most crucial energy issues that must be addressed by the new administration in its first 30 days in office. Once these efforts are under way, far more comprehensive steps to begin creating a less energy-intensive economy, both here and abroad, can be initiated.

For the past eight administrations and 25 Congresses, America based its entire energy policy on a concept that oil would always be cheap and ever abundant. In such a world, all other energy sources would stay even less expensive than oil. As a result, we wasted three decades to begin addressing these serious issues and spent far too much time and money trying to clean up what was perceived as energy that was too dirty.

Modern energy (oil, natural gas and electricity) was the basis for creating the 20th century. But in the 21st century, we will have to learn how to live without consuming vast amounts of fossil fuels. The time to wake from these illusions is now. How these challenges are tackled will define the success or failure of this presidency.



PAUL LACHINE