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## CAPITOL ANALYSTS NETWORK, INC.

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### WILL AMERICA GO ON AN ENERGY DIET?

Both President Bush and Congressional Democrats have declared energy security to be an important national objective, one that we should simultaneously attack by expanding domestic supply and reducing national demand. They have the same goals: Reduce reliance on unstable foreign sources and cut the nation's energy bill, all the while decreasing pollution. The Bush Administration believes that boosting supplies is more important; Democrats place more emphasis on enhancing energy efficiency and environmental progress. Now that Democrats control the Senate, their views carry considerable weight. They have sufficient leverage to compel Republicans to take their views seriously and negotiate a compromise. If the GOP refuses, few of Bush's energy initiatives may clear Congress.

A congressional stalemate does not prevent Americans from adopting their own version of "Energy Lite." Table 1 shows the national energy budget in 1999 compared to what is projected for 2020 as prepared by the non-partisan Energy Information Agency (EIA), housed inside the Department of Energy. Without policy changes, America is expected to increase its energy consumption at a modest annual rate of 1.3 percent per year, compounded over the period. This is less than half the rate assumed for real GDP growth. Even before official action is taken, it's clear that Americans are not planning to gorge themselves on additional energy.

**Table 1: American Energy Consumption, by Sector, Measured in Quadrillions of Btu's**

|                       | 1999        | 2020         | 1999 % of<br>Consumption | % Absolute<br>Growth | Annual Growth<br>Rate (%) |
|-----------------------|-------------|--------------|--------------------------|----------------------|---------------------------|
| <b>Industrial</b>     | 35.0        | 43.4         | 36.6                     | 23.8                 | 1.0                       |
| <b>Transportation</b> | 26.2        | 38.1         | 27.3                     | 45.5                 | 1.8                       |
| <b>Residential</b>    | 19.0        | 23.4         | 19.8                     | 23.1                 | 1.1                       |
| <b>Commercial</b>     | 15.6        | 20.7         | 16.3                     | 32.9                 | 1.4                       |
| <b>Total:</b>         | <b>95.8</b> | <b>125.6</b> | <b>100.0</b>             | <b>31.1%</b>         | <b>1.3</b>                |

Source: EIA, "Annual Energy Outlook with Projections to 2020"

Investors need to watch how Washington attacks the problems of reducing the demand for fossil fuels and making environmental progress by improving energy efficiency. The initiatives that policy makers are now considering now could roil the automobile, oil, coal, natural gas, refining, pipeline, electric utility, electric appliances, and railroad industries. Meanwhile, these industries will benefit handsomely from gains in electric utility efficiency: lumber and paper, chemicals, petroleum refining, primary metals, food processing, and stone, clay, and glass. Between them, these six consume three quarters of all industrial energy, according to Vice President Cheney.

## **I Got Sssssteam Heat**

Washington's first big idea of how to trim usage of coal, oil, and natural gas is to encourage electric utilities to install more efficient turbines, known as "combined heat and power systems" (CHP). Old style turbines are fossil fuel wastrels. They consume three Btu's in energy for every one Btu of electricity produced. Most of the Btu's now lost escape as heat into the air or water. CHP systems recapture some of this heat and channel it back into the turbines, producing more electricity. Simple CHP systems now routinely boost thermal efficiency from 33 percent of conventional turbines to 40 percent. By 2015, the EIA expects newly installed systems will reach 60 percent efficiency. The theoretical limit may be 80 percent.

CHP system installers are the mortal enemies of fossil fuels producers. Any natural gas fired utility that installs today's off the shelf technology can reduce its gas order by 17 percent without cutting its generation of megawatts produced. A utility that upgrades to the 60 percent systems anticipated within 15 years can cut its coal order by 44 percent. If 80 percent systems are ever developed, utilities can order 58 percent less fuel oil. However, the damage to the coal industry is most threatening. Since utilities consume 90 percent of all coal produced, it's clear that CHP systems are to coal producers what word processors were to carbon copies.

CHP technology also threatens an important profit center for railroads which haul coal, sometimes thousands of miles, from the west to east coast electric utilities.

According to the Electric Power Supply Association, the trade association that represents the lion's share of for profit utilities that use fossil fuels to generate electricity, 25 percent of the power produced by their members utilizes CHP technology. Given today's high fossil fuel prices, that percentage is bound to ratchet upward. The Bush Administration wants to encourage the shift, although it has yet to specify what exact tax incentives it will offer. Last week, documents presented to members of the House Budget Committee in a hearing that discussed the Bush Administration's energy plan revealed that the Administration will ask for \$2 billion over ten years in tax incentives, awarded to utilities that install CHP technology. The most likely reform will be to provide 7 year tax lives to such equipment, dramatically increasing early year depreciation deductions. Senate Democrats have made numerous supportive statements on behalf of CHP technology, but have yet to specify how they also plan to promote it.

CHP technology could get a boost from another direction – the EPA. It is in the process of tightening utility emission standards on sulphur, nitrous oxides, and mercury. Furthermore, only the naive believe that one day the EPA won't also issue dictats on carbon dioxide emissions to control the release of greenhouse gases. Compliance costs are directly related to the amount of fossil fuel burned, providing another reason to shift to more thermally efficient CHP technology.

## **Turning Point in the Price Struggle Against OPEC?**

In the aftermath of the 1973 oil embargo, the Japanese got the drop on Detroit by bringing to market smaller, more fuel efficient automobiles. Could foreign car manufacturers do it again,

this time by introducing first hybrid motors that use both electric batteries and conventional gasoline engines to power passenger vehicles? \$400 billion in annual sales of new personal vehicles is at stake just in the U.S. alone. Hybrid engines dramatically boost gas mileage by recapturing some of the energy now lost during braking. When a car brakes, its kinetic energy is transformed into heat. By channeling some of this energy into the battery, the driver can then use the battery to accelerate the car or to keep it from slowing down. Currently, American car buyers can order two hybrid cars, the *Prius* made by Toyota and the *Insight* by Honda, although waiting lists are long. One in two thousand American buyers did so in the last year. The *Prius* boasts gas mileage of 48 mpg, and the *Insight* gets 65 mpg. Many incorrectly assume that hybrids have to be plugged in to run. This misconception will be addressed in coming advertising campaigns.

Hybrid cars cost about \$3,000 more than traditional comparable subcompact vehicles. By doubling gas mileage, this is about the amount they will save over ten years in reduced gasoline consumption, assuming 12,000 miles per year are driven and gasoline cost \$1.75/gallon. Since hybrids only offer a 0 percent rate of return, they only appeal now to “early adopters” and the most green among us. President Bush and Senate Democrats want to change that. The Administration has proposed \$4 billion in tax incentives for hybrid car buyers over the next 10 years. It’s unlikely that Daschle will let Bush be greener than he is. Consequently, there is a good chance the Senate subsidy will be higher than Bush has requested. Even a \$1,000 incentive provided a hybrid car buyer turns the net investment into a \$2,000 cash down payment that generates \$3,000 in gasoline savings over a decade, producing an 8 percent rate of return. Spread out, \$4 billion could induce 4 million incremental hybrid car buyers.

Favorable media coverage of the subsidy will boost sales of hybrid cars, too, but the ultimate impact will depend on whether auto companies can control incremental engine costs or enhance fuel efficiency savings enough so that the public will demand hybrid engines without subsidy. If that cross over point is reached, then car buyers worldwide will switch en masse when their existing vehicles wear out. With the median age of the 210 million cars on America’s roads eight years old, it’s clear that it would take about twenty years for the transition to be completed even if every new car buyer started switching now. At the end of the transition, America, and other nations, would use half the gasoline they would otherwise. U.S. petroleum consumption alone would fall by 20 percent. Reduced U.S. gasoline consumption won’t be welcome news to refineries that make it, pipeline and truckers that ship it, and gasoline stations that sell it.

Table 2 contains a list of other hybrids under development. You can get summary information on them by going to Energy Department’s web site:

<http://www.ott.doe.gov/hev/concept.html> .

**Table 2: Hybrid Cars Coming to the U.S. Market in the Next Few Years**

| <b>Manufacturer</b> | <b>Model</b>                   | <b>Manufacturer</b> | <b>Model</b> |
|---------------------|--------------------------------|---------------------|--------------|
| Daimler Chrysler    | Citadel                        | Ford                | Prodigy      |
| Daimler Chrysler    | ESX3                           | General Motors      | Triax        |
| Dodge               | Durango Sports Utility Vehicle | General Motors      | Precept      |
| Fiat                | Multiple                       | Mitsubishi          | HV           |
| Ford                | Escape                         | Nissan              | Tino         |

**Higher Auto Fuel Efficiency May Become Mandatory This Year**

When the Arab oil embargo confronted American car drivers in 1973-4, new cars averaged only 13 miles per gallon. To defang OPEC, Congress passed the Energy Policy and Conservation Act which included “Corporate Average Fuel Efficiency” standards (CAFÉ) that ordered auto manufacturers to boost the miles per gallon on future cars they manufactured. The bill set a standard of 27.5 miles per gallon for passenger cars for new cars sold in 1985 and thereafter, and 20.7 for light trucks, a category that includes sports utility vehicles, in 1991. These standards have not been changed since then. However, with the growing popularity of light trucks these less efficient vehicles now represent one-half of all new purchases. As a result, the overall fuel efficiency of passenger vehicles on the road has gone *down* from 26mpg in 1987 to 24mpg.

This is a rare example of where America is becoming less energy efficient. Therefore, raising the standard again, as in 1974, presents a natural target for reformers who want to cut dependency on OPEC and reduce pollution. Both President Bush and the Congress are awaiting a study being finalized now by the National Academy of Science. If the Academy reports that higher CAFÉ standards are reasonable, it is likely that Congress will pass a resolution necessary to boost them and President Bush is expected to go along. Early speculation focuses on raising the light truck standard to 27.5 mpg, the same as for automobiles.

**Going Nuclear**

Almost without notice, nuclear power has grabbed market share from electric utilities relying on fossil fuels. Nuclear power now provides 20 percent of the nation’s electricity. The industry boosted output by 25 percent in the last decade, although eight reactors shut down during the period. Still, it’s long been assumed that nuclear power’s contribution to the nation’s energy supply would soon begin to wane as 103 aging reactors, operating at 65 plant sites in 31 states, reach the end of their expected 40 year useful lives. More than half the fleet will turn 40 by 2016.

It appears that assumption is incorrect, however. The Nuclear Regulatory Commission seems disposed to back the Administration’s call to relicense the bulk of nuclear plants for

another 20 years when they come up for review, some during Bush's first term. Vice President Cheney believes that many communities will view extended plant life, and even expansion of existing nuclear plants, as profitable opportunities since they coexisted without incident for decades. Local communities can snare cheap power and high paying jobs by agreeing to relicensing and output expansion. The added power can be sold to other communities thirsty for more juice who don't want power plants in their back yards. The Bush Administration has proposed \$1 billion in tax breaks to keep the reactors running.

If nuclear power gets a new lease on life, it reduces the electric utility industry's demand for fossil fuels. Just how bad the long run impact will be on oil, gas, and coal producers depends on whether ultimately Congress will agree to a long-term solution to the nuclear waste disposal problem. After decades of operation, nuclear plants are running out of room on where to store radioactive nuclear waste products that will have to decay for 10,000 years before they are no longer dangerous to humans. Perhaps Congress has ten more years to go before the problem becomes acute. Since 1990, the dominant proposal has been to ship the waste to Yucca Mountain, a remote area 90 miles away from Las Vegas, Nevada. Since 1990, Las Vegas gaming interests and Nevada politicians have been fighting it. Senate Majority Leader Daschle has said that the Yucca Mountain solution will not be implemented as long as Democrats control the Senate.

### **Other Issues are Less Important for Analysts**

In an echo from previous energy debates, Congress is likely to authorize Bush's minor proposals for further appropriations and tax credits to develop biomass energy, to weatherize the homes of targeted families, and to encourage homeowners to install solar panels. Bush also is considering forcing some electric appliance manufacturers to offer more efficient products for sale. Senate Democrats will add their own ideas by providing incentives for developers of alternative energy sources. None of these initiatives are expected to lower fossil fuel energy demand significantly any time soon – even if debate over them becomes noisy.

### **There's Only One Reason to be Bullish About Energy Investments**

That's because you believe that long run prices of fossil fuels will remain high. Given that the growth in demand will be sluggish, perhaps 1 percent per year, and that Washington wants to make it even slower, profit growth can't be predicated on robust unit sales growth.

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