North America Equity Research
27 June 2007

JPMorgan

Alternative Energy Strategy

Ways to play the renewables boom

- Alternative energy, while still heavily dependent upon government support, is beginning to develop a competitive cost structure.
- Technological advances are lowering the costs of producing energy from some alternative sources, notably solar, fuel cells, and geothermal, and have the potential to bring lower costs for biofuels.
- Economies of scale are likely to reduce the cost of producing energy from relatively mature alternative technologies, such as wind farms and hybrid propulsion systems.
- Efforts to curb climate change will force up the price of greenhouse-gas emissions in Europe starting next year, and some US power generators will start to face costs for greenhouse-gas emissions in 2009. The prospect of higher costs for the use of fossil fuels will make alternative technologies increasingly attractive, in our view.
- The outlook for particular technologies remains closely tied to government policies in the US and elsewhere. The first sections of this report examine the role of subsidies and incentives in shaping the marketplace. We then look in detail at the prospects of nine renewable sources of energy. The final section profiles 46 publicly traded small-cap and mid-cap companies leveraged to alternative energy.
- We believe the Alternative Energy space will remain highly bifurcated, with certain companies performing extremely well while most may underperform the market. We recommend that investors control the risks of abrupt changes in government policies by focusing on companies with international exposure and on technologies that are close to becoming cost-competitive with fossil fuels on an unsubsidized basis. We believe Biofuels, Wind, and Solar technologies best meet these criteria.

SMid-Cap Equity Strategy

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Alternative Energy Portfolio

Biomass		Green Plains Renewable Ener	GPRE	Hydrogenics Corp(US$)	HYGS	Ener1 Inc	ENEI	Energy Conversion Devices Inc	ENER
Covanta Holding Corp	CVA	Better Biodiesel Inc.	BBDS	Hoku Scientific Inc	HOKU	UQM Technologies	UQM	Evergreen Solar Inc	ESLR
US Energy Systems Inc	USEY	O2Diesel Corp	OTD	HydroGen Corp.	HYDG	Enova Systems Iinc.	ENOV	Emcore Corp	EMKR
Environmental Power Corp	EPG	Ethanex Energy Inc.	EHNX	Mechanical Technology Inc.	MKTY	**Hydropower**		DayStar Technologies Inc	DSTI
Biofuels (Ethanol & Biodiesel)		Xethanol Corp	XTHN	Millennium Cell Inc	MCEL	Idacorp Inc.	IDA	XSunX Inc.	XSNX
Verasun Energy Corp	VSE	Allegro Biodiesel Corp	ABDS	Distributed Energy Systems Cc	DESC	Avista Corp	AVA	Spire Corp.	SPIR
US BioEnergy Corp	USBE	**Fuel Cells**		**Geothermal**		**Microturbines**		Akeena Solar	AKNS
Aventine Renewable Energy H	AVR	FuelCell Energy Inc.	FCEL	Ormat Technologies Inc	ORA	Capstone Turbine Corp	CPST	SatCon Technology Corp	SATC
Pacific Ethanol Inc.	PEIX	Medis Technlogies	MDTL	Nevada Geothermal	NGLPF	**Solar**		**Wind**	
MGP Ingredients Inc	MGPI	Ballard Power Systems Inc(US	BLDP	**Hybrid Vehicles**		First Solar Inc	FSLR	Zoltek Companies Inc	ZOLT
Panda Ethanol Inc.	PDAE	Plug Power Inc.	PLUG	Quantum Technology Corp	QTWW	Sunpower Corp	SPWR	Wind Energy America	WNEA

Source: JPMorgan.

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Powering Up the Alternative Energy Strategy

The intuition is obvious: with energy prices soaring, the time seems right for alternative energy. But for investors, the reality is not quite so simple. Even with real energy prices at record levels, renewable forms of energy remain largely uncompetitive for cost reasons in most parts of the world.

For now, alternative energy is almost entirely a play on government regulation. In almost every wealthy country, government subsidies and mandates are the real fuel powering increased demand for renewables. Without public-sector government support, the renewables sector would have far less attraction for investors. And, inevitably, the prospect of capturing government money has brought forth a host of entrepreneurs whose skills lie more in lobbying and promotion than in energy production.

But the renewables sector is starting to develop a viable economic base. Higher oil and electricity prices aside, three fundamental factors are improving the commercial potential of several renewable sources:

Three fundamental factors making Alternative Energy more viable:

1. **Technological advances;**
2. **Economies of scale; and**
3. **Efforts to curb climate change.**

- Technological advances are lowering the costs of some types of renewable energy and hold considerable promise in others.
- Economies of scale are lowering unit production costs even in parts of the renewables universe in which technological improvements are slow.
- Efforts to curb climate change seem likely to lead to meaningful prices on greenhouse gas emissions in the European Union by the end of this decade and in parts of the United States by the middle of the coming decade, raising the cost of fossil fuels relative to the cost of renewables.

The first section of this report examines how these factors are likely to change the outlook for renewable energy sources over a relatively short time period. In the second part, we look in detail at the prospects of various renewable sources of electrical energy and vehicle fuel, including the performance of stocks highly leveraged to each sector. The third part of this report, starting on page 59, presents information on 46 publicly traded companies through which investors can participate in this fast-changing part of the economy.

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Profits from politics

Renewable energy is far from a new idea. Water mills have been in use since the days of the ancient Greeks, and in the mid-1800s many Americans lit their homes with alcohol derived from crops. Municipal waste has been burned to generate electricity since the start of the twentieth century, and geothermal generation dates to the 1920s.

In the modern era, however, most renewables have had two major disadvantages compared with fossil and nuclear fuels. First, renewables tend to be less reliable sources of energy supply than fossil fuels, particularly in electric generation. Second, at prevailing input prices the cost of producing energy from renewable sources is generally uncompetitive. According to estimates by the International Energy Agency, for example, waste and hydroelectric power are the only generation sources competitive with fossil fuels—and waste makes the grade only if the power plant is paid to take the community's trash. Alternatives such as wind and solar power are far from competitive at current market prices (Figure 1).

Figure 1: Long-run costs of electric generation

Fuel	Cost $/kWh
Waste	$0.02-$0.05a
Coal	$0.035-$0.045
Nuclear	$0.04-$0.05
Natural gas (combined heat & power)	$0.04-$0.06b
Hydroelectric	$0.04-$0.08
Natural gas (electric only)	$0.05-$0.06
Geothermal	$0.05-$0.08
Wind	$0.06-$0.08b
Solar	$0.20-$0.40

Source: International Energy Agency.

Notes: a) assumes power plant is paid to dispose of waste; b) assumes natural gas price of $5/MMBtu. All estimates assume 10% discount rate.

Waste and Hydro are price competitive with Fossil Fuel sources. Wind and Solar are likely to become more cost competitive with technological advancements and economies of scale.

As a result of these cost factors, only hydroelectric power has established itself as a significant renewable source of energy. All other types of renewables combined supply only about 2% of the world's electricity (Figure 2). Renewables supply less than 1% of all fuel for road transport. They account for a larger share of fuels used directly to heat buildings, principally due to the burning of biomass by households in poorer countries.

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The alternative energy (ex-hydro) sources contribute only 2% to all global electricity production.

Figure 2: Sources of global electricity production, 2004

	Thousand GWh	Percent of total
Coal	6,944	39.8%
Natural gas	3,419	19.6%
Hydro	2,810	16.1%
Nuclear	2,739	15.7%
Oil	1,170	6.7%
Biomass	149	0.9%
Waste	77	0.4%
Geothermal	56	0.3%
Solar	2	0.0%
Wind	82	0.5%
Total	**17,448**	
All renewable sources	**3,176**	**18.2%**

Source: International Energy Agency.

Certain growth, uncertain competitive landscape

The energy landscape is changing rapidly, due principally to government involvement. In almost all wealthy economies, and in many middle-income countries, governments are aggressively subsidizing the development of renewable technologies for electricity production, requiring utilities to sell electricity produced from renewable sources, mandating the use of biofuels in motor vehicles, and providing an array of subventions for biofuel production.

The profitability of alternative-energy investments thus will depend heavily on expectations of government policy, not only in the United States, but around the world. Although we consider an increasing level of public-sector support for alternative energy to be highly probable, the specific contours of that support will vary from time to time and from place to place. At the same time, we note that many governments continue to provide various forms of support for fossil fuels and nuclear energy, and these will have direct impact upon the profitability of alternative energy sources. If, for example, the US Congress heeds the coal industry's call for a massive program to produce liquid fuel from coal, biofuels producers could be adversely affected.

Political uncertainty is extreme in North America, where new legislation in the United States, Canada, and individual states and provinces may materially change the outlook for various energy alternatives. It is likely that at least some of these measures will be enacted by the end of 2007, but specific provisions remain highly uncertain.

In the United States, three separate types of legislation related to alternative energy are currently under active consideration in Congress.

1. **Federal farm programs are scheduled for reauthorization in 2007.** The farm bill is now viewed in Congress principally as an energy bill, as high crop prices driven by government support for corn-based ethanol have eliminated much of the need for direct government subsidies to farmers. The legislation is likely to include provisions to stimulate ethanol production

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In the US, three measures are under active consideration in Congress:

1. **Federal farm programs;**
2. **Omnibus energy bill; and**
3. **Greenhouse-gas emissions controls.**

from crops other than corn, significant research funding to develop cellulosic ethanol, and reductions in the acreage set aside as a conservation reserve so increased planting can mitigate the higher crop prices caused by ethanol-related demand. The farm bill may also address tariffs on imported ethanol. Passage in some form is expected by autumn.

2. **A sweeping energy bill cleared the Senate last week and is likely to pass Congress late this year.** The energy bill is the principal vehicle for debate and bargaining among legislative advocates of one or another type of energy. The final legislation will probably address hundreds of subjects, from motor-vehicle efficiency to tax credits for wind farms to coastal oil drilling to support for coal liquefaction. The details will be critically important to the domestic outlook for all alternative energy technologies.

3. **Congress is in the early stages of examining ways to control greenhouse-gas emissions.** The Bush Administration continues to oppose mandatory limits on greenhouse gases, and congressional action seems unlikely until a new president takes office in 2009. While the specific approach to emissions limits is far from clear at this point, whatever legislation is eventually adopted is likely to impose some cost on emissions, creating a comparative advantage for non-emitting technologies. However, the legislation may also incorporate subsidies to promote technologies that reduce greenhouse-gas emissions from fossil fuels, especially coal.

In Canada, the government recently announced targets for mandatory greenhouse-gas limits in 13 industrial sectors. The targets require a 31% reduction in greenhouse-gas intensity in these sectors by 2020, but relatively modest reductions in emissions from current levels. The new Canadian system is expected to involve tradable permits. Depending on the demand for permits, the system may eventually lead to a price for carbon emissions, benefiting non-emitting technologies. The scheme outlined by the Canadian government would not address greenhouse-gas emissions from transportation, but a separate scheme would require increased fuel efficiency in new cars and light trucks. The government will announce emissions limits for individual sectors this autumn, and is to have formal regulations in place by 2008.

The European Union initiates the second phase of controls on greenhouse-gas emissions in 2008. In our view, this will lead to a significant rise in the cost of a tradable emissions permit, increasing the attractiveness of electric generation technologies that emit less carbon dioxide than coal and natural gas.

The EU has supported alternative energy principally through "feed-in tariffs," which require electric utilities to purchase energy from renewable sources at guaranteed prices. While these favorable tariffs are likely to remain in place, European governments are now embroiled in a debate that has major implications for the potential growth of renewable generation.

The governments of the 27 EU member states are sharply divided over the promotion of nuclear power as a means of reducing greenhouse-gas emissions. Germany, holder of the EU's rotating presidency until June 30, wants the EU to commit to producing 20% of its energy needs from renewable sources by 2020. France, on the other hand, wants to emphasize nuclear development. Individual EU

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countries have staked out positions that mirror their national policies; Sweden and Germany are phasing out their nuclear plants even as France and Finland remain heavily committed to nuclear power. The British government put forth a controversial proposal in May to replace aging coal-fired power plants with new nuclear plants. The greater the EU's commitment to nuclear power, the less the long-run potential for renewables in Europe.

In the Asia-Pacific region, New Zealand and Australia have been most aggressive in promoting renewable energy. The Japanese government helped establish an Organizing Committee of Renewable Energy last year, but it has yet to move beyond a 2002 law requiring that 1.35% of total electricity production come from renewable sources by 2010. Elsewhere in the region, governments have generally been slow to embrace alternative energy, due both to the need for rapid expansion of electricity supplies and to relatively weak environmental regulation.

This isn't the Internet

We frequently hear investors discussing alternative energy as an early-stage industry with almost unlimited growth potential. The analogy is frequently drawn to the Internet, which has spun off a host of highly profitable companies and technologies since the early 1990s.

In our view, the alternative energy sector is fundamentally different from the tech sector. The growth of the Internet, although initially supported by US government research funds, was a private-sector phenomenon. The successful technologies were those that won hard-fought battles in the commercial marketplace, and their dominance was continually under challenge from newer technologies.

The alternative energy sector, on the other hand, is extremely dependent upon government policy. From an investor's point of view, the subsectors and individual companies most likely to enjoy success are not necessarily those with the best technologies, but rather those most able to develop technologies that can take advantage of supportive government policies.

The sector's dependence upon government leaves individual companies highly exposed to shifting political winds. Although renewables are now popular almost everywhere, the political influence of interests that lose from alternative energy remains strong. In Canada, for example, the government's desire to promote oil recovery from tar sands, an activity that emits large quantities of greenhouse gases, may overwhelm its support for non-fossil fuels. In the United States, rising grain and oilseed prices have diminished the political appeal of ethanol, and Congress may hurt ethanol producers by subsidizing a competing motor fuel derived from liquefied coal.

We recommend that investors seek to control political risks by geographic diversification as well as product diversification. Most small-cap companies in alternative energy focus on a single energy source in a single country, and are thus highly vulnerable to policy changes. Diversification, either by investing in companies with international exposure or by assembling a broad portfolio of technologies, offers at least modest potential for controlling the risks that are endemic to this sector.

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Alternative energy stocks should benefit from accelerating demand — Biofuel, Solar, and Wind most attractive.

While energy sources not derived from fossil fuels have been around for decades, we believe it is only now that the world may start to realize some of their potential. We continue to see a number of catalysts for alternative energy stocks that could, in the short term, be triggered by an acceleration in the consumption of renewable energy:

- Underconsumption in the US: Renewables account for only 5.9% of total energy consumption in the US (vs. 13.3% globally).
- More competitive pricing compared to traditional energy sources: The rising cost of fossil fuels has been met by a steep decline in the production cost of alternative energies (now a third of what it was just 20 years ago).
- Growing political pressure to reduce dependence on foreign energy sources: Higher energy prices and political unrest in the Middle East have shone light on the growing dependence of the US on foreign energy sources — US imports of oil and gas have increased by 194% and 405%, respectively, over the last 20 years and as a share of total energy consumption in the US are now at all-time highs.
- Tighter limits on greenhouse-gas emissions in the EU and in several US states.

While we see a number of catalysts pushing demand for alternative energies overall, we continue to believe Biofuels, Wind and Solar offer the most attractive outlooks.

But not all alternative energies share the same outlook. Starting on page 21 of this report, we compare nine alternative energy sources with regard to their growth outlook and addressable market, their cost structure, and their developing stage and momentum. In Figure 20, we rank them according to these criteria.

In our previous report on alternative energy, published April 11, 2006, we highlighted Biofuels, Wind, and Solar as the top three alternative technologies among the nine we profiled. Our opinion was based on the fact that these three technologies were already commercialized, experiencing strong secular demand, and benefiting from a capacity-constrained environment.

Overall, our thesis played out well. Solar (up 27.2%) and Wind (87.5%) outperformed the Russell 2000 (1,455 and 74,870 bps, respectively) in an environment where the Alternative Energy Portfolio experienced a negative performance and was not favored by investors (down 10.3%). However, our positive call on Biofuels did not play out, as it underperformed both the market and the Alternative Energy Portfolio (down 50.5%) due to sharply higher corn prices and a larger increase in capacity than we expected (see Figure 3).

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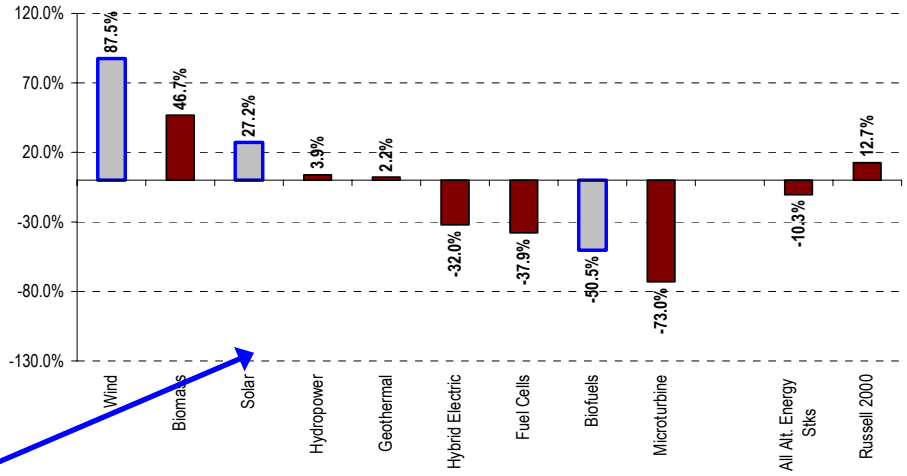
Figure 3: Price Performance by Alternative Energy — since April 11, 2006.



Source: Factset and JPMorgan.

Wind, Biomass, and Solar outperformed R2K while the remaining six technologies underperformed significantly.

As Figure 3 indicates, the Alternative Energy space remains a highly bifurcated area in which to invest, with some technologies significantly outperforming the market while most underperform. Among the nine alternative energies, we continue to believe Biofuels, Solar, and Wind have the most attractive outlooks:

- Biofuels (already commercial, strong growth, capacity constrained industry, large addressable transportation market, likely to get strong legislative boost in US this year),
- Solar (already commercial and expected to deliver strong growth due to heavy subsidies and capacity constrained market, technological advance, and large addressable market); and
- Wind (already commercial, 24%/yr est. production growth through 2010, cost structure makes it more nearly competitive with fossil fuels on unsubsidized basis).

In Figure 4 below, we provide a summary view of each technology, ranking it with regards to its growth outlook, addressable market, cost structure, and development. In this figure, 5 represents the highest possible score on each factor, and -5 represents the lowest.

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Figure 4: Alternative Energy Sources/Technologies – Qualitative Scores

Qualitative Scores (High to Low)						
Energy/Technology	Exp. Grwth	Cost Struct.	Dev. Stage	Add. Market	Dev. Momentum	**Total Score**
Biofuels	1	-1	1	1	1	**3**
Solar	1	-1	1	1	1	**3**
Wind	1	1	1	0	0	**3**
Biomass	1	1	1	0	-1	**2**
Fuel Cells	1	-1	0	1	1	**2**
Hybrid Electric Veh.	1	-1	0	1	1	**2**
Microturbines	0	-1	0	1	1	**1**
Geothermal	-1	1	1	-1	-1	**-1**
Hydropower	-1	1	1	-1	-1	**-1**

Source: JPMorgan.

Starting on page 59, we profile 46 stocks that have (or will likely have by '09) at least 25% of sales coming from alternative energies.

46 alternative energy stocks

This report would lose its meaning were we not to provide a list of related equities. Figure 5 below offers a list of the 46 stocks that meet our criteria to be included in the Alternative Energy Portfolio (a profile of each stock starts on page 61). This is a list of stocks whose performance is highly correlated with the success of non-fossil fuel energy sources/technologies. Specifically, all 46 stocks:

- Have at least 25% of sales coming from alternative energies, and/or
- Plan to have at least 25% of sales coming from alternative energies by 2009; and
- Have a market cap below $7.0 billion.

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Alternative Energy Portfolio

Figure 5: 46 Alternative Energy Stocks – Summary Stats priced as of June 26, 2007.

			52-Wk			JPM Coverage		Company Info		Liquidity					EPS			Valuation				
		Current	High/	Market	Russell			Year	Sales					Net Debt	First Call Mean			P/E	P/E	P/B	EV/LTM	EV/LTM
Company	Ticker	Price	Low	Cap	2000	Rating	Analyst	Founded	2006	FCF	R&D	Debt	Cash	% of MC	CY05A	CY06A	CY07E	CY06A	CY07E		Sales	EBITDA
Biofuels																						
Verasun Energy Corp	VSE	$13.25	29/13	$1,019				2001	$558	$26	$1	$209	$288	-12%	NA	$1.48	$0.40	9.0x	33.3x	2.0x	1.5x	5.3x
US BioEnergy Corp	USBE	$10.79	18/10	$734				2003	$125	NA	NA	$237	$215	2%	NA	$0.41	$0.57	26.3x	19.0x	1.5x	3.0x	22.4x
Aventine Renewable Energy Holdi	AVR	$14.51	43/14	$608		OW	Silver	2006	$1,592	$9	$0	$300	$426	-33%	NA	$1.64	$0.98	8.8x	14.8x	1.9x	0.2x	3.4x
Pacific Ethanol Inc	PEIX	$12.63	27/12	$512	Yes			1941	$226	-$87		$108	$51	11%	($0.40)	($0.07)	$0.30	NM	42.1x	1.7x	2.0x	27.7x
MGP Ingredients Inc	MGPI	$16.25	25/16	$268	Yes			1941	$322	$15	$3	$15	$6	-15%	$0.54	$0.99	$1.17	16.5x	13.8x	1.8x	0.6x	4.5x
Panda Ethanol Inc.	PDAE	$4.25	12/0	$132				2003	$0	NA	NA	$136	$164	-15%	NA	NA	NA	NA	NA	1.7x	NM	NM
Green Plains Renewable Energy I	GPRE	$17.85	37/17	$107				2004	$0	-$56	NA	$11	$32	-14%	NA	$0.22	$0.73	82.7x	24.6x	1.2x	NM	36.3x
Better Biodiesel Inc.	BBDS	$2.16	16/1	$67				2004	$0	NA	NA	$0	$0		NA	NA	NA	NA	NA	NA	NM	NM
Ethanex Energy Inc.	EHNX	$0.62	5/0	$40				2006	$0	NA	NA	$0	$13		NA	NA	NA	NA	NA	2.9x	NM	NM
O2Diesel Corp	OTD	$0.52	1/0	$40				2000	$0	-$6	NA	$0	$5	-11%	($0.22)	($0.20)	($0.27)	NM	NM	8.2x	92.1x	NM
Xethanol Corp	XTHN	$1.36	11/1	$39				2000	$11	-$11	$1	$0	$21	-53%	($0.83)	($0.93)	($0.82)	NM	NM	0.9x	1.7x	NM
Allegro Biodiesel Corp	ABDS	$2.10	10/1	$39				1990	$2	-$4	$0	$3	$4	3%	($29.00)	NA	NA	NA	NA	1.4x	10.9x	NM
Solar																						
First Solar Inc	FSLR	$88.27	88/24	$6,388				1999	$135	NA	$8	$96	$325	-2%	NA	$0.07	$0.53	1261.0x	168.0x	16.7x	33.1x	305.5x
Sunpower Corp	SPWR	$61.85	66/24	$4,635	Yes			1988	$237	-$66	$20	$200	$215	-2%	($0.22)	$0.51	$1.13	121.3x	54.9x	7.3x	13.5x	68.2x
Energy Conversion Devices Inc	ENER	$30.05	41/27	$1,188	Yes			1960	$102	-$170	NA	$26	$272	-22%	$0.65	($0.48)	$0.07	NM	449.9x	2.2x	8.7x	NM
Evergreen Solar Inc	ESLR	$8.64	14/7	$601	Yes			1994	$103	-$96	$20	$90	$55	6%	($0.29)	($0.41)	($0.28)	NM	NM	6.8x	6.1x	NM
Emcore Corp	EMKR	$5.37	10/4	$273	Yes			1984	$144	-$10	$22	$96	$88	-9%	($0.47)	($0.46)	($0.31)	NM	NM	1.9x	1.6x	NM
DayStar Technologies Inc	DSTI	$6.60	10/2	$99				1997	$0	-$23	$10	$0	$4	-3%	($1.35)	NA	NA	NA	NA	10.2x	623.2x	NM
Spire Corp.	SPIR	$9.73	12/6	$80				1969	$20	-$9	$1	$1	$4	-3%	$0.01	($1.03)	NA	NM	NA	10.2x	3.6x	NM
XSunX Inc.	XSNX	$0.46	1/0	$72				1997	$0	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA
Akeena Solar	AKNS	$3.79	5/0	$70				2001	$13	NA	NA	NA	NA		NA	($0.16)	NA	NM	NA	NA	NA	NA
SatCon Technology Corp	SATC	$1.19	2/1	$51				1985	$34	NA	$2	$12	$5	12%	NA	($0.50)	($0.18)	NM	NM	NA	1.6x	NM
Wind																						
Zoltek Companies Inc	ZOLT	$40.19	45/17	$1,177	Yes			1975	$92	-$41	$6	$20	$15	-1%	($1.56)	$0.32	$0.95	125.3x	42.3x	6.9x	10.0x	NM
Wind Energy America	WNEA	$2.15	3/0	$23				2007	$1	$0	$0	$0	$0	1%	NA	NA	NA	NA	NA	34.5x	NM	NM
Biomass																						
Covanta Holding Corp	CVA	$24.72	26/14	$3,802		N	Smith_Andrew	1992	$1,269	$275	NA	$2,412	$306	51%	$0.46	$0.72	$0.83	34.3x	29.9x	4.5x	4.4x	11.0x
Environmental Power Corp	EPG	$8.85	9/4	$87				1982	$54	-$28	NA	$69	$63	13%	($1.55)	($1.28)	($1.02)	NM	NM	4.8x	1.8x	NM
US Energy Systems Inc	USEY	$1.03	7/1	$22				1981	$21	-$23	NA	$225	$39	864%	($0.85)	($1.72)	NA	NM	NA	0.6x	10.1x	176.1x

Source: Factset, JPMorgan, and First Call Estimates.

Source: Market Cap and company financials in millions.

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Figure 6: 45 Alternative Energy Stocks – Summary Stats priced as of June 26, 2007, Cont…

			52-Wk			JPM Coverage		Company Info		Liquidity					EPS			Valuation				
		Current	High/	Market	Russell			Year	Sales					Net Debt	First Call Mean			P/E	P/E	P/B	EV/LTM	EV/LTM
Company	Ticker	Price	Low	Cap	2000	Rating	Analyst	Founded	2006	FCF	R&D	Debt	Cash	% of MC	CY05A	CY06A	CY07E	CY06A	CY07E		Sales	EBITDA
Fuelcells																						
Ballard Power Systems Inc(US$)	BLDP	$4.97	8/4	$570				1979	$50	-$25	$51	$0	$175	-32%	($0.84)	($0.58)	($0.51)	NM	NM	1.9x	7.6x	NM
FuelCell Energy Inc.	FCEL	$7.66	10/6	$520	Yes			1969	$33	-$74	$27	$1	$179	-24%	($1.56)	($1.61)	($1.36)	NM	NM	2.6x	10.9x	NM
Medis Technlogies	MDTL	$13.45	31/11	$470	Yes			1992	$0	-$46	$20	$0	$65	-2%	($0.68)	($1.08)	($1.15)	NM	NM	4.6x	NM	NM
Plug Power Inc.	PLUG	$2.92	5/3	$254	Yes			1997	$8	-$43	$42	$0	$251	-101%	($0.66)	($0.58)	($0.55)	NM	NM	0.9x	-0.5x	NM
Hoku Scientific Inc	HOKU	$12.08	13/2	$199				2001	$5	$1	$2	$0	$20	-11%	$0.13	($0.07)	($0.29)	NM	NM	7.7x	33.2x	NM
Hydrogenics Corp(US$)	HYGS	$1.21	3/1	$111				1995	$30	-$33	$11	$0	$51	-44%	($0.41)	($1.42)	($0.28)	NM	NM	1.9x	2.0x	NM
HydroGen Corp.	HYDG	$4.49	7/3	$57				2001	$1	-$9	$4	$0	$24	-41%	NA	($0.67)	NA	NM	NA	2.1x	55.0x	NM
Mechanical Technology Inc.	MKTY	$1.28	3/1	$49				1961	$8	-$12	$13	$0	$18	-33%	($0.49)	($0.43)	($0.38)	NM	NM	2.7x	3.7x	NM
Distributed Energy Systems Corp	DESC	$1.13	5/1	$45				1996	$45	-$24	$4	$10	$10	-19%	($0.45)	($1.38)	($0.64)	NM	NM	1.2x	0.8x	NM
Millennium Cell Inc	MCEL	$0.63	2/1	$35				1998	$0	-$7	$1	$10	$8	22%	($0.34)	($0.25)	($0.17)	NM	NM	NA	191.7x	NM
Hybrid Vehicles																						
UQM Technologies	UQM	$4.24	5/2	$107				1967	$6	-$4	$0	$1	$8	-8%	($0.11)	($0.13)	($0.11)	NM	NM	8.8x	17.0x	NM
Ener1 Inc	ENEI	$0.23	1/0	$101				1985	$0	-$24	$5	$18	$0	54%	NA	NA	($0.08)	NA	NM	NA	NM	NM
Quantum Technology Corp	QTWW	$1.53	4/1	$100	Yes			2000	$158	-$58	$22	$47	$14	16%	($0.57)	NA	NA	NA	NA	1.1x	0.7x	NM
Enova Systems Iinc.	ENOV	$6.60	8/3	$98				1976	$2	-$6	$1	$1	$9	-5%	NA	($0.33)	NA	NM	NA	14.5x	32.0x	NM
Microturbines																						
Capstone Turbine Corp	CPST	$1.13	3/1	$118	Yes			1988	$23	-$32	$11	$0	$25	-31%	($0.49)	($0.37)	($0.23)	NM	NM	2.5x	3.6x	NM
Geothermal																						
Ormat Technologies Inc	ORA	$35.55	45/32	$1,355	Yes			1965	$269	NA	NA	$489	$124	28%	$0.48	$0.99	$0.84	35.9x	42.2x	3.1x	6.4x	16.1x
Nevada Geothermal Power Inc.	NGLPF	$0.79	1/1	$42				1995	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA
Hydropower																						
Idacorp Inc.	IDA	$31.83	40/31	$1,398	Yes		N Edgecombe	1998	$926	NA	NA	$1,178	$4	76%	$1.62	$2.15	$1.87	14.8x	17.0x	1.2x	2.8x	9.0x
Avista Corp	AVA	$21.42	28/21	$1,130	Yes		N Edgecombe	1889	$1,506	NA	NA	$1,104	$83	86%	$0.92	$1.47	$1.26	14.6x	17.0x	1.2x	1.4x	7.8x
Simple Average																		24.9x	26.5x	3.6x	20.3x	44.0x
S&P 600																		**21.0x**	**18.8x**	**2.0x**	**0.9x**	**9.2x**

Source: Factset, JPMorgan, and First Call Estimates.

Note: All stocks in the Alternative Energy Portfolio meet the following criteria: at least 25% of sales come from alternative energies, and/or plan to have at least 25% of sales coming from alternative energies in the next 2 years ; and a mkt cap. below $7.0 billion.

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Alternatives to Fossil Fuels

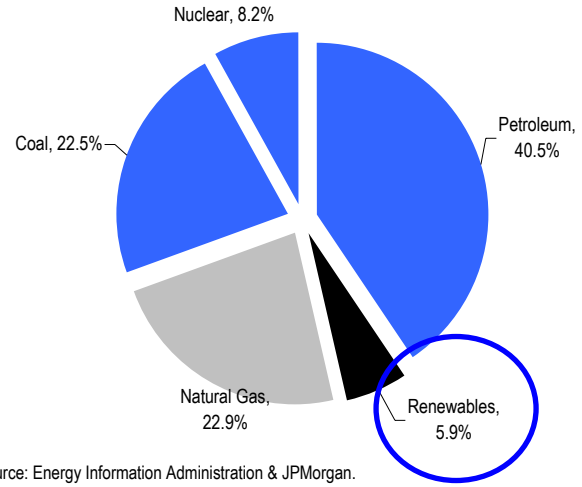
While non-fossil energy sources have been around for decades, we believe it is only now that the world may start to realize some of their potential. We see a number of catalysts that could, in the short term, trigger an acceleration in the consumption of such energies:

- Underconsumption in the US;
- Competitive pricing compared to traditional energy sources;
- Growing political pressure to reduce dependence on foreign energy sources; and
- Deadlines for the reduction of greenhouse emissions.

Catalyst 1: Underconsumption in the US

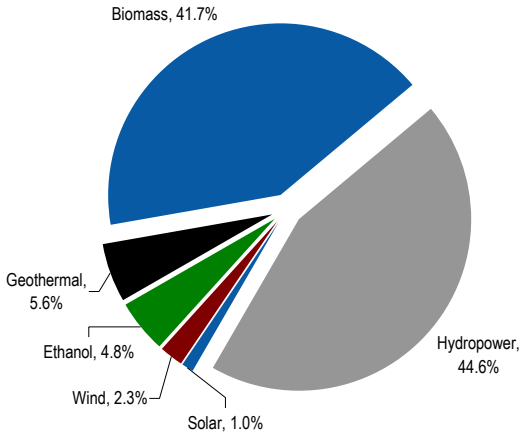
Despite the fact that most alternative energies have been around for decades, they only represent 5.9% of total energy consumption in the US, with non-hydro energy accounting for a mere 3.3% (Figure 7 and Figure 8 below).

Figure 7: US Energy Consumption by Source — 2005



Source: Energy Information Administration & JPMorgan.

Figure 8: US Renewable Energy Consumption — 2005



Source: Energy Information Administration & JPMorgan.

Alternative energy (Renewables) only accounts for 5.9% of energy consumption in the US…

What is even more interesting, renewable energy consumption as a percentage of total energy consumption in the US is less than half that of the rest of the world. Figure 9 and Figure 10 below compare energy consumption between the US and Global (including US). As seen in figures below, relative to global consumption, the US is a heavier user of Nuclear (8% vs. 6%) and Fossil Fuels (86% vs. 80%), but it is at present significantly less reliant on renewable energy, which makes up only 6% of total energy consumption (vs. 13.3% globally).

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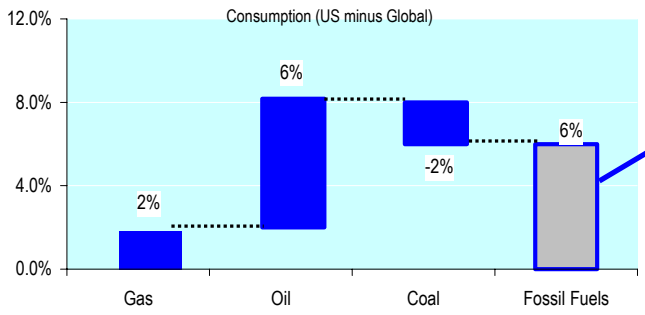
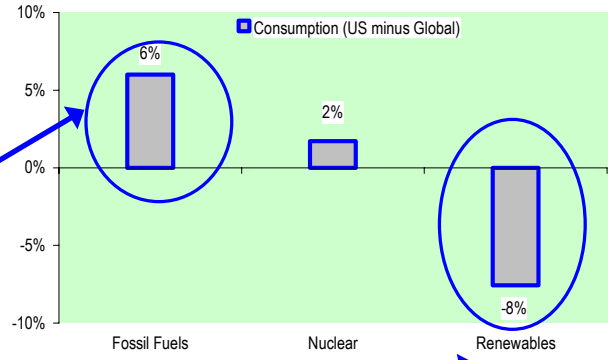
Figure 9: Fossil Fuel Energy Consumption — US vs. Global



Source: EIA &JP Morgan.

Figure 10: Energy Consumption — US vs. Global



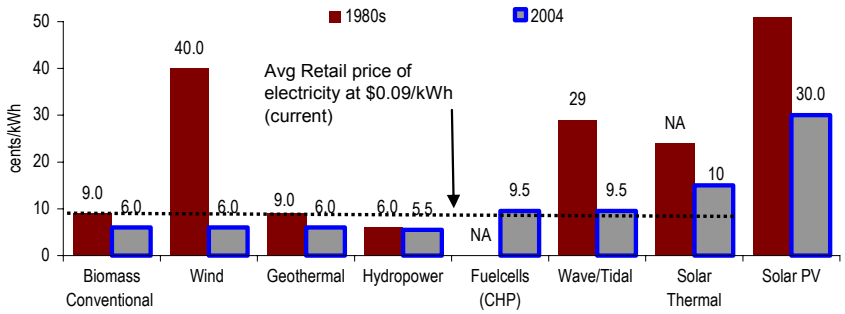
Source: EIA & JPMorgan.

Alternative energy accounts for a much smaller share of energy consumption in the US than worldwide.

Catalyst 2: Competitive Pricing Compared to Traditional Energy Sources

Technology improvements have led to lower production costs…
We believe that pricing, which has held consumption of alternative energies at bay for many years, may now be an argument in favor of many of them. As the technology involved in the production of alternative energy has evolved, the price of producing a kilowatt hour (kWh) of alternative energy has significantly declined, and is in some cases now a third of what it was just 20 years ago (Figure 11). As a result, most alternative produced energy today at a cost that is below the average retail selling price of electricity.

Figure 11: Renewable energy actual cost of production — cents/kWh



Source: EIA, American Wind Energy Association, Solarbuzz.com, Businessweek.

Note: The estimated production costs shown above are as of 1980s and 2004. Biomass as of 1985, Wind as of early 1980s (as per American Wind Energy Association), Geothermal as of 1985, Hydropower as of mid 1980s, Solar thermal as of 1984, Wave / Tidal energy as of 1982 (emerging technology and not commercialized), Solar PV as of early1980s.

The production cost of most alternative energies today is well below the average retail price of electricity.

… while fossil fuel energy prices have risen dramatically.
Moreover, while the cost of producing alternative energy has declined, the price of energy from traditional sources has increased significantly (Figure 12). Since the beginning of 2002 through 2006, the prices of natural gas, electricity (mainly produced from burning coal), and crude oil have increased 241%, 36%, and 174%, respectively.

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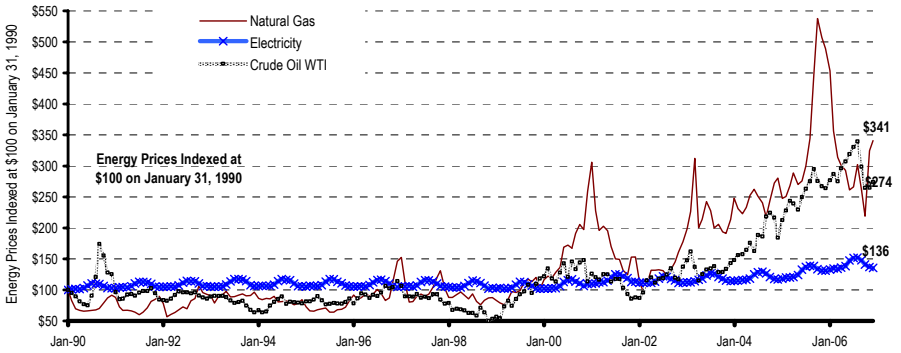
Figure 12: Energy Prices indexed to $100 on January 31, 1990



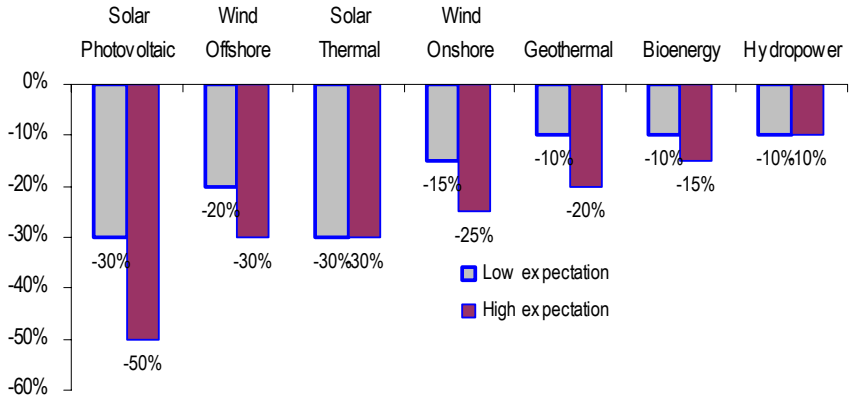
Source: Energy Information Administration.

We believe pricing has become a big driver of business and consumer demand. This rise in energy prices has had a very tangible impact on businesses, which are not only pressured to demonstrate to their own constituencies that they are eco-friendly, but now view alternative energies as a way to manage rising and fluctuating energy costs.

Technological development further supports the case for acceleration in the consumption of alternative energies. Many of these technologies are still in a development stage and, as a result, the cost of producing alternative energy is expected to continue to decline significantly in coming years (Figure 13).

Figure 13: Expected cumulative reduction in costs of renewable technologies by 2020

The cost of producing alternative energy is expected to continue to decline significantly over the coming years.



Source: United Nations Economic and Social Council, http://www.unece.org/ie/se/pdfs/energy03e.pdf .

Catalyst 3: Mounting Political Pressure to Reduce Dependence on Foreign Energy Sources

Today, US imports of oil and gas (as a percentage of total energy consumption) are at an all-time high (Figure 14). In fact, the US has gone from being a relatively self-sufficient economy with regards to its energy consumption, to importing one third of the energy it consumes. This dependence on foreign energy sources has become a

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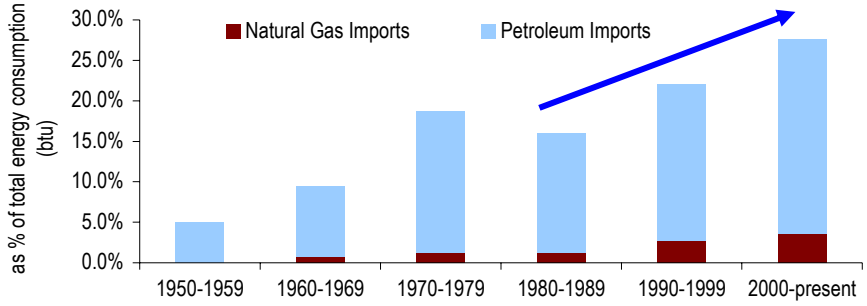
growing source of political concern given the rise in energy prices and their notable impact on the US consumer and the US economy.

The US has gone from being a self-sufficient economy with regards to energy consumption, to importing one third of its energy.

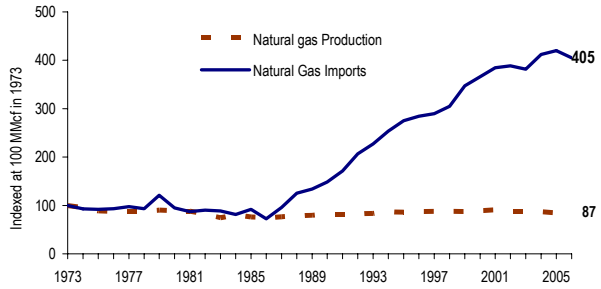
Figure 14: US oil and natural gas imports as % of total energy consumption



Source: Energy Information Administration.

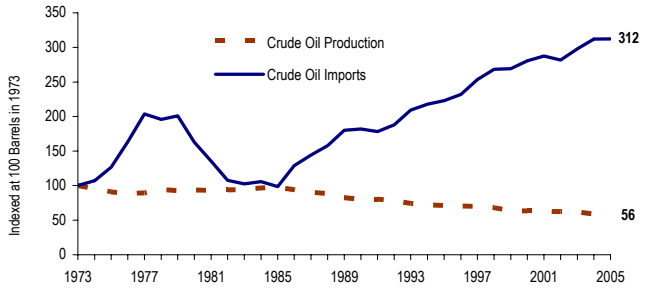
With still significant political unrest in the Middle East (a clear driver of higher energy prices) it is sensible to assume that the need to reduce our dependence on foreign energy sources will remain a major political topic. This should bring about political pressure to increase the use of alternative energy sources, especially when considering the sharp increase in US imports of foreign Oil and Gas that has occurred over the last 20 years (Figure 15 and Figure 16).

Figure 15: Natural Gas Production and Imports 1973-2006



Source: Energy Information Administration.

Figure 16: Crude Oil Production and Imports 1910-2006



Source: Energy Information Administration.

Demand for alternative energy will be fueled by international and US commitment to reduce emissions intensity by 2010-2012.

Catalyst 4: Deadlines for Reductions in CO_2 Emissions.

In addition, there is clearly an emerging global market that could also represent an additional opportunity for US firms that provide alternative energy or related technologies. Today, renewable energy accounts for only 13.3% of energy consumption globally, with close to 80% of that being biomass (see Figure 17 and Figure 18 below). **Even though the US is not a signatory to the Kyoto protocol, the US has committed to reducing its emissions per unit of GDP by 18% by 2012 (from 2002 levels).**

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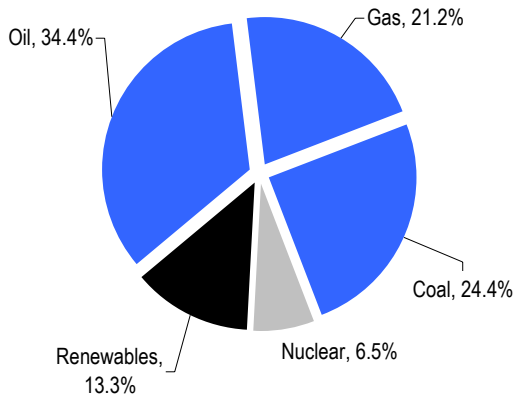
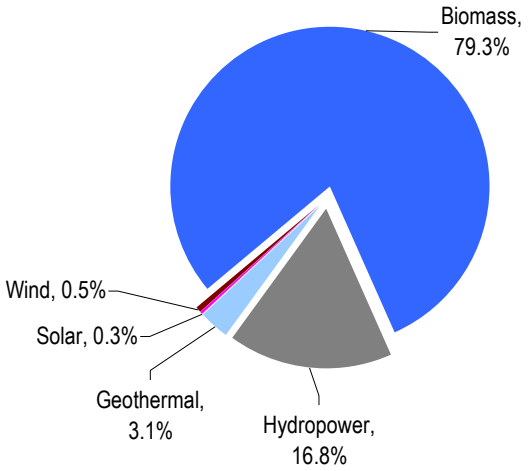
Figure 17: Global Consumption by Source — 2004



Source: IEA.

Figure 18: Global Renewable Energy Consumption — 2004

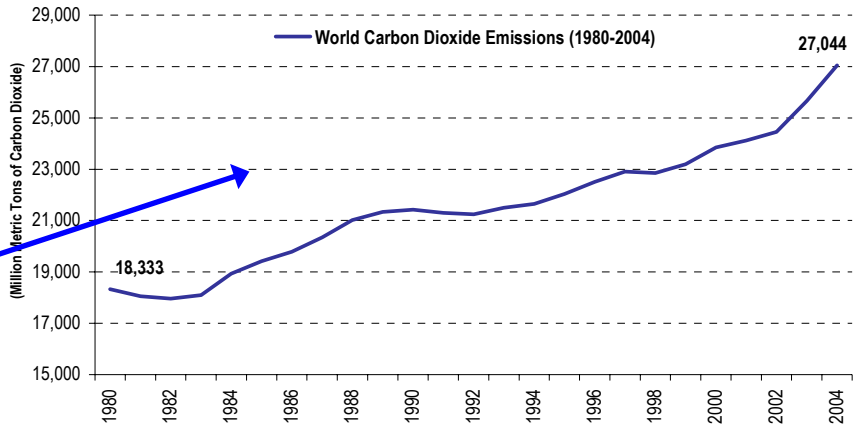


Source: IEA, Renewable 2005 Global Status Report.

World CO_2 emissions have increased by 50% during the last 20 years and the trend is likely to accelerate as China and India continue to grow and consume more fossil fuels (Figure 19). Worldwide concern about global warming is not likely to abate, and agreements like the Kyoto protocol should result in an increase in the use and consumption of renewable energies. As shown in Appendix II (which summarizes the resolutions of the Kyoto protocol), Japan, the European Union, and Canada, have already committed to an average 6-8% reduction of their CO_2 emissions (from 2002 levels) by 2010.

Figure 19: US Carbon emissions – 1980-2004 (mm metric tonnes)

CO2 emissions increased by 50% during the last 20 years. This trend is expected to accelerate as China and India's economies undergo an expansion.



Source: Energy Information Administration.

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Alternative Energy Technologies

Not all alternative energy technologies share the same outlook. Figure 20 below provides a summary view of each technology, ranking it with regards to its growth outlook and addressable market, as well as their cost structure, and their developing stage and momentum — with 5 being the highest possible score, and -5 being the lowest. Among the 9 technologies presented in this report, we believe Biofuels, Solar, and Wind share the best outlook, as all three are already commercial and benefit from a strong demand and capacity constrained environment. A more detailed description of each technology follows.

Figure 20: Summary of Alternative Energy Sources

A Higher Qualitative Score Reflects a More Positive Outlook

Qualitative Score (Sum Total)	Name	Relative Strengths and Weaknesses: Growth Projections	Cost Structure	Developing Stage	Addressable Market	Developing Momentum
3	**Biofuels**	**Above Average** 1 2005 Energy Security Act, RFS (increased min. usage from 4.0 to 7.5 bb gallons by 2012), President Bush's goal of 35 bb by 2017, subsidies ($0.51/gallon), phasing out of toxic MTBE, & >25% additional capacity under const. will be the catalysts for above avg. growth expectation.	**High** -1 Ethanol would not be cost competitive without subsidies (~$0.51/gallon), or at a lower gasoline price. At $1.90/gallon, Ethanol sells for 15% above the avg cost of $1.65. Biodiesel not cost competitive with diesel fuel. Better feedstock and enzymes can lower cost significantly.	**Commercial** 1 Refiners have been blending ethanol for many years to improve the octane level of gasoline. Flex Fuel vehicles will help introduce E10 and E85 to market (blends of unleaded gasoline with 10% & 85% of ethanol, respectively).	**High** 1 Presently the transportation sector (27% of total energy expenditure) is consuming most of the biofuel output. As more capacity is added, biofuels can continue to take a larger share of the gasoline market and address other markets (home heating, etc.).	**High** 1 40 countries have legislation to promote use of biofuels and 27 mandate blending of biofuels. Cos increasing production due to high demand. Many cos are bioengineering better cellulosic crops and enzymes to improve energy output efficiency.
3	**Solar**	**Above Average** 1 Growth projections for Solar PV in the US of 17%[2] CAGR between '04-'10. High worldwide growth (60% CAGR) in the past 5 years[9]. Solar thermal est. growth of 6%[2] CAGR between '04-'10.	**High** -1 High silicon prices (raw material in PV cells) raise capital costs/kWh in PV systems. PV generation costs close to $0.30/kWh[10]. Solar thermal power cheaper at $0.12-$0.18/kWh[9] but still expensive compared to most alternative energies.	**Commercial** 1 Solar PV applications for distributed energy and on grid system are in high demand . The market for portable PV is commercial. Solar thermal devices showing high (worldwide) growth for heating purposes. Several governments offering large tax benefits to encourage use.	**High** 1 Ubiquitous, applicable across geographies. Stationary as well as portable applications. Application of solar technologies in heating.	**High** 1 Advancements to exploit pervasiveness of sunlight include thin film cells, window films PVs. Concentrator technologies could reduce the costs of solar thermal power. Federal solar research goal to reduce cost 50% by 2015.
3	**Wind**	**Above Average** 1 Tax subsidies ($0.019/kWh[1]) and improved wind turbine technology leading to an increase in demand. US proj. growth at 24%[2] CAGR and global at 20%[3] CAGR for '04-'10. Global growth for the last 10 years was at 30%[4] CAGR.	**Low** 1 Second cheapest source of Alt. Energy. Since 1980's, improved wind turbines have led to a 100x energy output improvement, and production cost have come down from $0.40/kwh to $0.06/kwh.	**Commercial** 1 Improvements in turbine design have increased the viability of wind energy. Costs have declined by 12-18% with every 100% increase in global capacity[9]. As of 2004, wind energy accounts for 2.3% of US renewable energy consumption.[2]	**Average** 0 Applications across geographies, but dependent on large open spaces. Applicability difficult in urban areas, a constrained distributed energy segment due to nature of the source.	**Average** 0 Onshore wind energy is a mature technology, even as improvements continue. Offshore wind technology is an area of significant growth with expected cumulative cost reduction of 20-30% by 2020[8].
2	**Biomass**	**Above Average** 1 Biomass is expected to grow at 19.6% CAGR (led by cofiring), municipal solid waste ("MSW") at 4% CAGR between 2004-2010[2].	**Low** 1 Electricity production at $0.06/kWh[9] is competitive. Costs can be volatile depending on availability of waste products and cofiring fuels.	**Commercial** 1 Biomass cofiring is an established practice in the utilities industry. Landfill gas commercialized as well. Biomass gasification utilization growing in developing countries.	**Average** 0 Weaknesses include lack of applicability in residential and commercial sectors, distributed energy (non industrial) applications.	**Low** -1 No major advances expected to increase target market or reduce costs.

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Figure 21: Summary of Alternative Energy Technologies Cont…

A Higher Qualitative Score Reflects a More Positive Outlook

Qualitative Score (Sum Total)	Name	Relative Strengths and Weaknesses: Growth Projections	Cost Structure	Developing Stage	Addressable Market	Developing Momentum
2	**Fuel Cells**	Above Average (1) Strong growth of greater than 20% CAGR expected between 2004-2015[11]. Growth led by stationary and transportation applications.	High (-1) High cost structure a result of both high capital cost and hydrogen delivery costs. Presently, the costs are between $0.09-$0.10/kWh, including the Combined Heat and Power ("CHP") benefits[6]. Standalone costs are high at $0.15-$0.21/kWh[12].	Transitional (0) Fuel Cells are in a transitional phase due to high fixed costs for most commercial applications and lack of hydrogen infrastructure and distribution channel.	High (1) Applications in stationary combined power and heat, transportation, and portable devices. Applications across geographies.	High (1) Advances in hydrogen storage, production, landfill gas treatment to address fuel issues. DoE demonstrated that they can build systems for less than $800/kw (or about 80% lower than in 2004) and goal is to reduce it further by 50% to $400/kw by 2010.
2	**Hybrid Electric Veh.**	Above Average (1) Annual sales in US rose 100% to 200,000 in 2005 and rose an additional 28% in 2006 to 254,545 units. A 20% CAGR is expected between 2006-2010[13].	High (-1) Costs of hybrid vehicles significantly higher, dependent largely on government subsidies.	Transitional (0) Commercialized by large manufacturers, efforts to reduce weight; add power should boost adoption.	High (1) Technology applications to gain large support from legal requirements, vehicle emissions reduction initiatives across the world.	High (1) Plug-in hybrids expected to bring improved MPG, as well as other benefits like cheaper recharge of batteries.
1	**Microturbines**	Average (0) Microturbines have a short operating history with 1st commercial units introduced in '99. Growth will be limited due to high capital costs ($700-1100/kw), but DoE aims to bring cost down to ~$500/kw.	High (-1) Economic viability only in remote areas and backup applications at a cost of $0.11/kWh[6]. Largely dependent on fossil fuels as an energy source for combined heat and power applications.	Transitional (0) Commercialized for stationary power systems, applications for transportation in initial stages. Experiments continue in CHP systems.	High (1) Wide range of applications, from stationary to transportation. Variety of fuels may be used. Grid connectivity a positive.	High (1) Estimated reduction of 50% in capital installation costs by 2030[6].
-1	**Geothermal**	Below Average (-1) Growth constrained by availability of resources; EIA estimates indicate 3% CAGR in the USA between 2004-2010[2].	Low (1) Although dependent on the resource quality, geothermal plants could produce electricity at a cost of $0.04-$0.08/kWh[9].	Commercial (1) Among the earliest commercialized renewable energy sources. Commercial both in power generation and direct heat. New technology makes it feasible to heat individual buildings from geothermal sources below.	Low (-1) Applications in electricity production as well as direct heat. Market limited by geothermal resources and their development. Lack of applications in distributed energy markets.	Low (-1) Advancements dependent on cheaper drilling techniques, remote detection of producing zones during exploration, well-stimulation measures to extract heat more efficiently, and improvements in power conversion technologies.
-1	**Hydropower**	Below Average (-1) Slow growth in generation (2% CAGR between 2005-2010). Growth constrained by environmental and displacement issues that large hydropower causes and the regulations to avoid these.	Low (1) With regulation, costs for large dams hydropower may have gone up rather than down in the recent past with operating and maintenance costs close to $0.02/kWh[14]. Small hydropower(1-10MW) costs higher at $0.04-$0.07/kWh[9].	Commercial (1) The second most utilized renewable resource in the world. As of 2004. Hydropower accounted for 43.9% of US renewable energy consumption.	Low (-1) Growth dependent on regulation of hydropower projects.	Low (-1) Mature technology with low possibility of significant future cost reductions or efficiency gains.

Source: JPMorgan.

(1) Database of State Incentives for Renewable Energy; (2) 2006 Annual Energy Outlook; (3) British Petroleum (quoting BTM consultants); (4) British Petroleum; (5) American Wind Energy Association; (6) Congressional Budget Office; (7) EIA; (8) United Nations Economic and Social Council; (9) Worldwatch Institute; (10) Solarbuzz.com; (11) National Renewable Energy Laboratory; (12) Fuelcell Energy Company reports; (13) Scientific American; (14) As per discussions with EIA.

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Alternative Energies

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Biofuels

Qualitative Score		3	
	Above Avg.	Average	Below Avg.
Expected Growth	1	0	-1
Cost Structure	1	0	-1
Development Stage	1	0	-1
Addressable Market	1	0	-1
Developing Momentum	1	0	-1
Sum Total		3	

Ethanol and biodiesel are the two major biofuels in existence today. Their importance in energy policy is linked to the fact that they are substitutes for petroleum-based fuels. Biofuels hold some of the greatest short-term promise among alternative energies as they are a clear play in the transportation sector. In the United States, biofuels production has risen from 7 trillion Btu in 1981 to 460 trillion Btu in 2006, a 19% compound annual growth rate. Worldwide, consumption of biofuels is forecast to increase nine-fold by 2030, according to the International Energy Agency.

Ethanol was used as fuel in the US as early as 1908. It can be used either as a gasoline additive to increase octane ratings while reducing air pollution, or as a fuel on its own. Pure ethanol is damaging to engine parts, particularly those made of plastic and rubber, and is not widely used as fuel. A given quantity of ethanol contains 50% less energy than the same quantity of gasoline, so the more ethanol-intensive the fuel, the lower the vehicle's fuel efficiency.

In the US, much of the gasoline supply in urban areas contains 10% ethanol, a mixture marketed as E10. E85, a blend of 15% unleaded gasoline and 85% ethanol, is less widely available and is typically used in flexible fuel vehicles with special engines. We estimate that approximately 800,000 flex-fuel vehicles will be sold in the US this year. In Brazil, the second-largest producer of ethanol after the US, most new cars can operate on pure gasoline, pure ethanol, or any mixture in between, and the government occasionally alters the proportion of ethanol in motor-fuel based on the supply of and demand for sugarcane.

Ethanol can be made from any number of raw materials. The US industry is based largely on corn. The average delivered cost of one gallon of corn-based ethanol produced from the dry-milling process in the US can be approximated by the formula

(Corn price per bushel x 0.25) + $0.65

On that basis, with corn selling for around $3.90 per bushel, we estimate the average cost of ethanol delivered to a gasoline blending location to be approximately $1.65 per gallon. With the current market price of ethanol near $1.90 per gallon, the industry would appear quite profitable. Legislation passed by the US Senate on June 21, but not yet enacted, would all but ensure future profitability by increasing required consumption.

The commercial success of ethanol in Brazil is due to the use of sugar cane as the raw material. The production cost of sugar cane ethanol in Brazil is one-third to one-half the US cost, as one acre of land planted in sugar cane can produce twice as much ethanol as an acre planted in corn. The next few years are likely to see a large expansion of sugar cane ethanol production in Colombia, Peru, Central America, and the Caribbean. Ethanol can also be made from sugar beets, sorghum, wood, wheat straw, palm oil, and many other commodities.

Biodiesel is a clean-burning alternative to diesel fuel. Germany, where biodiesel is made principally from rapeseed, is the world's largest producer and consumer. Rapeseed is generally an ideal source, as it has a high oil content. In the US,

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biodiesel is made principally from soybean oil. JPMorgan estimates that the current US production cost is in excess of $2.70 per gallon, which compares unfavorably with a current wholesale price for diesel fuel of approximately $2.05 per gallon.[1] Animal fats and used cooking oils are expected to provide more cost-effective sources of biodiesel in the US. Canada may also become a biodiesel producer based on genetically modified canola varieties designed for the purpose.

Regulatory Drivers

The size and shape of the market for biofuels depend heavily on government regulation. According to one recent study, at least 40 countries now have legislation to promote the use of biofuels, and at least 27 mandate the blending of biofuels with petroleum-based motor fuels.[2]

US consumption growth is attributable to the federal Energy Policy Act of 2005. This law includes a renewable fuels standard, which requires an annual increase in the use of ethanol and biodiesel to 7.5 billion gallons in 2012. President Bush recently proclaimed a goal of using 35 billion gallons of alternative fuels by 2017. A bill approved by the Senate on June 21, 2007, would require use of 36 billion gallons by 2022. If these amounts were to be produced entirely from corn, they would essentially require use of the entire US corn crop.

US tax policies strongly support the expansion of the ethanol industry. The Energy Policy Act encourages the construction of ethanol and biodiesel plants by providing a $0.10/gallon tax credit through 2008 for all ethanol made in plants that produce less than 60 million gallons per year. The federal government also offers gasoline refiners and distributors a blender credit of $0.51 per gallon, most of which if effectively passed through to ethanol producers. The industry is further aided by a $0.54 per gallon tariff on imported ethanol, which makes Brazilian ethanol uncompetitive in the US market.

Many states also offer subsidies to ethanol. Nebraska, for example, offers certain producers a resellable tax credit of $0.18/gallon of ethanol manufactured, while North Dakota offers interest subsidies for construction of biodiesel plants. The federal government and numerous states impose lower motor-fuel taxes on ethanol than on standard gasoline, providing an incentive for drivers to switch; in California, for example, the combined state and federal excise tax is $0.364 per gallon for gasoline, but only $0.2215 on ethanol.

Political considerations will continue to drive the US ethanol market. Many policymakers are concerned about US dependence upon corn-based ethanol, and about higher food prices resulting from ethanol-driven demand for corn. The farm legislation now before Congress is likely to include extensive support for research and development into ethanol made from switchgrass, which could be grown in regions too arid for corn. Many companies are now exploring the potential of switchgrass ethanol. According to its proponents, genetically modified switchgrasses could produce ethanol far more economically, and with far less expenditure of

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1. For information on production costs, see "Archer-Daniels-Midland: Initiating Coverage with an Overweight Rating," JPMorgan Research, April 24. 2007.
2. Garten Rothkopf, "A Blueprint for Green Energy in the America," report for the Inter-American Development Bank, 2007.

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energy, than corn. However, significant technical breakthroughs will be required before switchgrass ethanol can be produced at scale, and most experts do not expect it to be commercially viable within the next five years.

The farm bill debate will also include discussion of policy toward ethanol imports. Under the Caribbean Basin Free Trade Agreement (CAFTA), ethanol from outside the Caribbean region can be imported into the US duty-free up to 7% of total US ethanol production, if it comes through a CAFTA country; this has encouraged Cargill, Inc., to ship partially processed Brazilian ethanol to El Salvador, whence finished ethanol is exported to the United States. In addition, CAFTA allows an unlimited amount of ethanol produced from sugar cane grown in the Caribbean region to enter the US duty-free.

As sugar cultivation becomes more efficient in the Caribbean countries, more ethanol from the region is likely to enter the United States, potentially depressing domestic prices. In addition, the tariff that limits ethanol imports from Brazil expires in January 2009. Eliminating the tariff would be negative for US ethanol producers, but would stimulate further increases in cane ethanol production in Brazil.

Key Strengths:

Strong Secular Growth: The International Energy Agency estimates that demand for biofuels will increase from the equivalent of 15.5 million metric tons of oil equivalent in 2004 to 147 million tons in 2030.

Already Commercial: Refiners have been blending ethanol for many years, and increased market penetration of flex-fuel vehicles will boost demand for higher ethanol blends.

Large Addressable Market: Clear play in the transportation market, which accounts for 28% of total energy consumption in the US. Potential expansion into other markets where diesel fuel is used today (e.g., commercial and residential heating).

Strong Developing Momentum: Bioengineered cellulosic crops and enzymes could improve energy output efficiency.

Limited Investment Needed for the Supply and Distribution Network: Ethanol can be transported by barge, truck, and rail, although dedicated equipment will be needed to prevent contamination. The ability to sell ethanol through the same distribution channels as gasoline limits the need for capital to upgrade the distribution network.

Key Weaknesses:

High Production Cost in the US: US corn-based ethanol is not competitive with Brazilian ethanol in the absence of import tariffs, and if oil prices were to fall it would not be competitive with gasoline without subsidies. However, bioengineered switchgrasss and other crops could lower costs significantly.

Vulnerable Crops: To minimize transport costs, most US ethanol plants are located in rural areas and designed to draw on corn grown near the plant. Localized droughts,

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floods, blights, or other events could impair the availability of corn at a given plant location, rendering the plant uneconomic.

Exposure to Multiple Commodity Prices. The profitability of ethanol depends upon the relationship between two prices, that of the commodity from which ethanol is made and that of gasoline. With corn near $4 per bushel, we estimate that corn-based ethanol will be profitable so long as the wholesale price of gasoline is above $1.24 per gallon. The price of gasoline has been above that level since early 2005. However, the combination of high corn prices and low gasoline prices would make ethanol production unprofitable.

Potential Excess Capacity. Strong demand has drawn a large amount of capital into biofuels. Domestic production may exceed demand by the end of 2007, trailing lower margins. Diminished profitability could lead to industry consolidation, but a large proportion of US capacity is controlled by farmer-owned cooperatives, complicating potential merger transactions. Tariff reductions could reduce profitability of domestic producers.

Key Players & Recent Performance

The positive macro drivers described above and a strong equity market have led to a significant increase in the total number of public biofuel companies during the last year. Since our last publication, the number of public small-cap companies in this space has increased from 4 to 13 while the total market cap increased 174% from $1.4 billion to $3.7 billion. In Figure 22, we identify 13 public companies that have significant exposure to ethanol and biofuels. These companies have at least 25% (or plan to by 2009) of sales coming from biomass energy/equipment production or an explicit commitment from management to work towards development of ethanol and biofuels.

Figure 22: Ethanol and Biofuels Energy Companies Sorted by Market Cap – Key Stats

Company Name	Ticker	Price	Market Cap	EV	Sales LTM	EV/S	P/B
Verasun Energy Corp	VSE	$13.25	$1,019	$895	$558	1.5x	2.0x
US BioEnergy Corp	USBE	$10.79	$734	$747	$125	3.0x	1.5x
Aventine Renewable Energy Holdi	AVR	$14.51	$608	$405	$1,592	0.2x	1.9x
Pacific Ethanol Inc	PEIX	$12.63	$512	$567	$226	2.0x	1.7x
MGP Ingredients Inc	MGPI	$16.25	$268	$228	$322	0.6x	1.8x
Biofuel Energy	BIOF	$10.40	$151	$183	$0	NM	NA
Panda Ethanol Inc.	PDAE	$4.25	$132	$112	$0	NM	1.7x
Green Plains Renewable Energy I	GPRE	$17.85	$107	$92	$0	NM	1.2x
Better Biodiesel Inc.	BBDS	$2.16	$67	$68	$0	NM	NA
Ethanex Energy Inc.	EHNX	$0.62	$40	$29	$0	NM	2.9x
O2Diesel Corp	OTD	$0.52	$40	$35	$0	92.1x	8.2x
Xethanol Corp	XTHN	$1.36	$39	$18	$11	1.7x	0.9x
Allegro Biodiesel Corp	ABDS	$2.10	$39	$40	$2	10.9x	1.4x

Source: Factset, JPMorgan.

Note: Excluded ADM and Bunge from the Biofuels Portfolio since these companies had a market cap greater than $7.0 bb.

Priced as of June 26, 2007.

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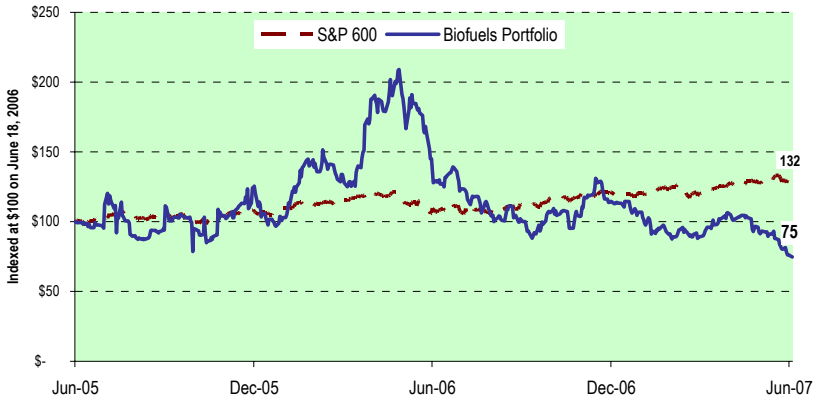
Figure 23 below shows how the Ethanol and Biofuels portfolio has performed versus the S&P 600 over the past two years. The Ethanol and Biofuels portfolio here is market-cap weighted, and is composed of the 12 stocks shown in Figure 22 above. After peaking at $209, the Biofuels Portfolio is trading at a two-year low due to sharply higher corn prices and ethanol production capacity increases.

Figure 23: Biofuels Portfolio Price Performance vs. S&P 600



Source: Factset, JPMorgan.
Portfolio priced as of June 18, 2007.

Ethanol Timeline

1826 – Samuel Morey developed an engine that ran on ethanol and turpentine.

1862 – The Union Congress put a $2 per gallon excise tax on ethanol to help pay for the Civil War.

1896 – Henry Ford built his first automobile, the quadricycle, to run on pure ethanol.

1906 – Congress removed tax on ethanol, making ethanol an alternative to gasoline as a motor fuel.

1908 – Henry Ford produced the Model T as a flexible fuel vehicle; it could run on ethanol, gasoline, or a combination of the two.

1920s – Gasoline became the motor fuel of choice. Standard Oil began adding ethanol to gasoline to increase octane and reduce engine knocking.

1945-78 – Ethanol use as a fuel was drastically reduced. From the late 1940's until the late 1970's, virtually no commercial fuel ethanol was available anywhere in the U.S.

1975 – Oil crisis combined with low sugar prices made Brazil embark on the Proalcohol program; U.S. begins to phase out lead in gasoline. Ethanol became more attractive as a possible octane booster for gasoline.

1978 – Gasohol was defined for the first time in the Energy Tax Act of 1978, as a blend of gasoline with at least 10 percent alcohol by volume, excluding alcohol made from petroleum, natural gas or coal.

1980-84 – Congress enacted a series of tax benefits for ethanol producers and blenders. These benefits encouraged the growth of ethanol production.

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1983 – The Surface Transportation Assistance Act increased the ethanol subsidy to $0.50/gallon.

1984 – The number of ethanol plants in the U.S. peaked at 163. The Tax Reform Act increased the ethanol subsidy to $0.60/gallon.

1985 – Low prices of ethanol led to wide shakeout in the industry, following low prices of gasoline. Ethanol production at 595 million gallons.

1988 – Ethanol used as an oxygenate in gasoline for the first time. This point, MTBE had dominated the market for oxygenates.

1990 – Omnibus Budget Reconciliation Act decreased the ethanol subsidy to $0.54/gallon of ethanol.

1992 – The Energy Policy Act of 1992 (EPACT) provided for two additional gasoline blends (7.7% and 5.7% ethanol). EPACT also defined ethanol blends with at least 85% ethanol as "alternative transportation fuels."

1997 – Major U.S. auto manufacturers began mass production of flexible-fueled vehicle models capable of operating on E-85, gasoline, or both. Despite their ability to use E-85, most of these vehicles used gasoline as their only fuel because of the scarcity of E-85 stations.

1998 – The ethanol subsidy was extended through 2007. The ethanol subsidy of $0.54/gallon was reduced gradually to $0.51/gallon in 2005.

1999 – Some states began to pass bans on MTBE use in motor gasoline because traces of it were showing up in drinking water sources, presumably from leaking gasoline storage tanks.

2000 – EPA recommended that MTBE should be phased out nationally.

2001 – A 1998 law reduced the ethanol subsidy to $0.53/gallon starting Jan.1, 2001.

2002 – U.S. automakers continued to produce large numbers of E-85-capable vehicles to meet federal regulations that require a certain percentage of fleet vehicles to be capable of running on alternative fuels. Over 3 million of these vehicles were in use.

2003 – California began switching from MTBE to ethanol to make reformulated gasoline, resulting in a significant increase in ethanol demand by mid-year.

2004 – Ethanol production was 13 billion liters, second only to Brazil.

2004 – American Jobs Creation Act extended ethanol tax credit through 2010.

2005 – Renewable Fuels Standard passed. Set a target of 4 billion gallons in 2006, rising to 7.5 billion gallons in 2012. EPACT also extended the biodiesel tax credit ($1 per gallon) through 2008.

2006 – Indy Racing League switches to a 10% ethanol and 90% methanol fuel mixture as part of a phase-in of ethanol as part of a switch to an all-ethanol formula in 2007.

2007 – At least 40 countries now have legislation to promote the use of biofuels, and at least 27 mandate the blending of biofuels with petroleum-based motor fuels.

2007 – President Bush proclaimed a goal of using 35 billion gallons of alternative fuels by 2017.

Source: EIA, JP Morgan.

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Solar Energy

Qualitative Score	3		
	Above Avg.	Average	Below Avg.
Expected Growth	1	0	-1
Cost Structure	1	0	-1
Development Stage	1	0	-1
Addressable Market	1	0	-1
Developing Momentum	1	0	-1
Sum Total	**3**		

Solar energy is widely used in certain countries for water heating, and to a limited extent for space heating. Solar electricity production is less widespread, principally because of costs. Three countries, Japan, Germany, and the United States, account for 85% of solar electric capacity worldwide.

Solar electric production falls broadly into two categories: solar thermal energy and photovoltaic ("PV") cells and modules. In 2005, the United States produced 16 million square feet of solar thermal collectors, mainly for swimming pool heating. Use in electric generation is small, in the United States and elsewhere. High input costs have resulted in unfavorable price trends. In 2005, the average cost of solar thermal collectors in the US was $2.86 per square foot, up from $2.43 in 2004.

Photovoltaic cells use semiconducting materials to convert sunlight directly into electricity. Photovoltaics are still the most expensive source of alternative energy, but the production cost of electricity using PV cells and modules declined sharply in the early years of this decade to $0.25-$0.30 per kWh. In 2005, however, higher input costs have increased the average price per watt of PV installations by around 10%, and costs are believed to have risen again in 2006. Because of its unfavorable cost characteristics, solar generation by utilities and independent power producers has grown little in the US since 1994.

Owners of many individual homes and commercial structures, on the other hand, have taken advantage of the tax credits available to subsidize solar installations. Photovoltaic cells are particularly cost effective in off-grid applications, such as illuminating highway signs in rural areas. Total US sales of photovoltaic cells and modules rose from 78 mW in 2003 to 425 in 2005. Approximately 40% of US demand is met through imports, but US manufacturers have a significant export business as well.

The solar industry benefits from intensive research and development and from large economies of scale. The International Energy Agency estimates that a doubling of production of solar systems reduces their cost by 20%. Much recent research involves systems that concentrate sunlight to increase the electricity output of photovoltaic units. US government estimates put the total cost of concentrated solar power at around $0.15 per kWh, approximately 40% below the cost of power from standard photovoltaic installations.

The federal solar research program targets solar-electricity cost reductions on the order of 50% by 2015. Because of its potential to be ubiquitous and to become far less expensive, solar energy has one of the highest growth potentials among all alternative energies.

Regulatory Drivers

Solar energy has gained traction much faster abroad, especially in Japan and Germany, than in the United States. Domestic growth will depend heavily upon state and federal regulation.

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At the federal level, businesses that install photovoltaic systems receive tax benefits that lower the effective cost by half. States are developing programs such as the California Solar Initiative, which aims to use $2.9 billion in tax incentives to encourage the installation of 3,000 MW of solar capacity on California rooftops by 2017. In Arizona, which provides a 25% tax credit for household solar devices, the state Corporation Commission last year required electric utilities to generate 15% of their energy from renewable sources by 2025, with solar expected to play a prominent role. New Mexico is establishing a 30% tax credit for household solar systems. Such programs could lead to the installation of large numbers of solar systems over the next few years. The energy bill approved by the US Senate on June 21 would require that 30% of hot water demand in new or substantially renovated federal buildings be met through installation of solar hot water heaters, supporting demand as well.

Key Strengths:

Strong Secular Growth: Solar photovoltaic generation has soared in the US, mainly in off-grid applications.

Major Research Effort Underway: Because of the evident possibilities for cost reduction, many public and private entities have committed significant resources to solar research and development.

Large Addressable Market: Solar PV and solar thermal have the potential to be ubiquitous, and can be used in both portable and stationary applications.

Strong Developing Momentum: More PV applications are under development, such as thin film cells for window film PVs. Concentrator technologies could further reduce the cost of solar thermal power.

Low Variable Costs: Once PV systems and solar thermal are installed, these applications have very low variable costs.

Cost Relief during Peak Periods: Solar systems are most efficient at producing electricity during the daylight hours. This is also the time of day when electricity consumption is highest. The days when electricity use hits seasonal peaks — hot days when air conditioning units are turned up high — also are likely to be days when solar units produce most effectively.

Key Weaknesses:

High Fixed Costs: Even as the costs of PV systems have declined considerably in recent years, solar PV remains among the most expensive ways of producing alternative energy. Due to high fixed costs, the production cost of alternative energy through solar PV is approximately three times the average retail selling price of electricity in the US. Fixed costs of PV systems have been adversely impacted by their dependence on silicon as raw material. Attempts are being made to replace silicon with dye-sensitizing cells, in order to overcome this weakness. Solar thermal systems offer little cost saving over solar PV.

Unsuitable for Baseline Energy. By their nature, solar systems operate best on bright, sunny, long days. Efficiency declines on days with less sunshine.

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Key Players & Recent Performance

We identify ten public companies in Figure 24 that have significant exposure to solar energy, along with six private companies, Konarka, Suntechnics, Nanosolar, Solengy Corp., Borrego Solar Systems, and Perfect Power. The two companies added since last year are First Solar (FSLR/Not Covered) and Akeena Solar (AKNS/Not Covered). These companies have at least 25% of sales coming from solar energy/equipment production or an explicit commitment from management to work towards development of solar energy.

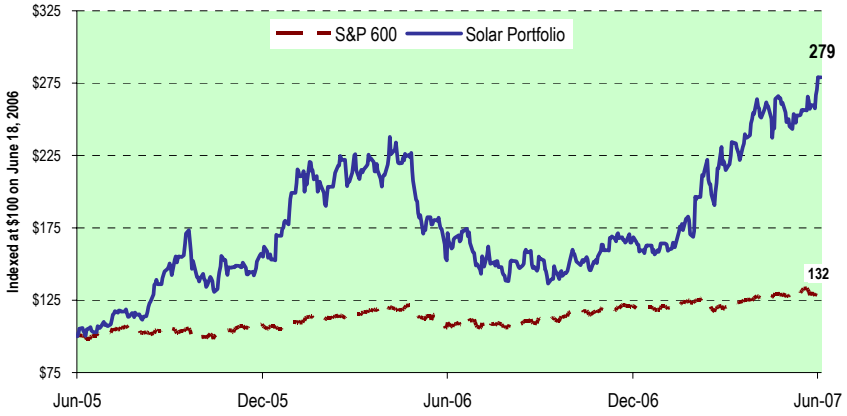
Figure 24: Solar Energy (PV cells and modules) Companies Sorted by Market Cap – Key Stats

Company Name	Ticker	Price	Market Cap	EV	Sales LTM	EV/S	P/B
First Solar Inc	FSLR	$88.27	$6,388	$6,231	$135	33.1x	16.7x
Sunpower Corp	SPWR	$61.85	$4,635	$4,563	$237	13.5x	7.3x
Energy Conversion Devices Inc	ENER	$30.05	$1,188	$921	$102	8.7x	2.2x
Evergreen Solar Inc	ESLR	$8.64	$601	$639	$103	6.1x	6.8x
Emcore Corp	EMKR	$5.37	$273	$249	$144	1.6x	1.9x
DayStar Technologies Inc	DSTI	$6.60	$99	$96	$0	623.2x	10.2x
Spire Corp.	SPIR	$9.73	$80	$78	$20	3.6x	10.2x
XSunX Inc.	XSNX	$0.46	$72	NA	$0	NM	NA
Akeena Solar	AKNS	$3.79	$70	NA	$13	NM	NA
SatCon Technology Corp	SATC	$1.19	$51	$57	$34	1.6x	NA

Source: EIA, Solarbuzz.com, JPMorgan.
Priced as of June 26, 2007.

Figure 25 below shows how the Solar Energy portfolio has performed versus the S&P 600 over the past two years. The Solar Energy portfolio here is market-cap weighted, and is composed of the ten stocks shown in Figure 24 above. As of June 2005, the portfolio is up over 180% with secular demand for Solar power continuing to be strong in the US and overseas. It is also worth noting the performance of this portfolio is highly skewed by First Solar's 300% performance since its IPO in November 2006.

Figure 25: Solar Energy Portfolio Price Performance vs. S&P 600



Source: Factset, JPMorgan.
Portfolio priced as of June 21, 2007.

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Solar Energy Timeline

1950s – First photovoltaic cell created at Bell Labs.

1958 – Federal support for space program linked to Vanguard satellite.

1970s – Integrated buildings program started by DOE focusing on design and demonstration for buildings.

1974 – Solar Energy Industry Association founded.

1978 – PV energy commercialization program accelerating installation of PV systems in federal facilities.

1981 – Boeing and Kodak develop first PV cells with efficiency greater than 10%.

1989 – Renewable Energy and Efficiency Technology Act passed to improve module efficiencies and electric power production costs.

1989 – PV for Utility Scale Applications, a nation-wide private/public program, started to assess the viability of utility-scale PV systems.

1992 – 15% efficiency achieved by a PV cell.

1993 – Record efficiencies in polycrystalline and single crystalline devices, approaching 15% and 30%.

1994 – First solar dish generator using free piston Sterling engine.

1994 – 3M Company introduces a new silvered plastic film for solar applications.

2004 – Worldwide solar energy PV installations were 927MW, up from 574MW in 2003.

2004 – Solar energy growth for the past 15 years was 25% worldwide.

2005 – EPACT raised the business investment tax credit for solar installations from 10% to 30% (these apply to property installed in 2006 and 2007).

2006 – California Public Utilities Commission approved the California Solar Initiative (CSI), a comprehensive $2.8 billion program that provides incentives toward solar development over 11 years. A new solar cell converts 40% of sun's energy into electricity – a new record.

Source: EIA, Solarbuzz, JPMorgan

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Wind Energy

Qualitative Score		3	
	Above Avg.	Average	Below Avg.
Expected Growth	1	0	-1
Cost Structure	1	0	-1
Development Stage	1	0	-1
Addressable Market	1	0	-1
Developing Momentum	1	0	-1
Sum Total		**3**	

Description

Wind generation converts wind's kinetic energy into electricity. The first major research initiative to improve the efficiency of wind turbines was after the oil shock of the late 1970s. Since then, the technology has come a long way, increasing energy output per turbine 100-fold, halving the weight of turbines, and reducing noise pollution. As a result, wind capacity has grown at a 25% compound annual rate in this decade. More than 85,000 wind turbines are now installed worldwide. Approximately 80% of wind turbine manufacturing is located in Europe.[3]

Most of the world's wind generating capacity is in Europe, where wind supplies 20% of electricity consumption in Denmark and 30% in the North German state of Schleswig-Holstein. Germany is the largest single market in the world, with 38% of global wind capacity, followed by Spain, with roughly 20% of global capacity. Wind generation accounts for 30% of all generating capacity installed in the European Union since 2000, and now provides about 3% of the EU's electricity.

In the United States, wind turbines contributed 0.6% of total electricity production in 2006. However, wind provided more than one-fourth of renewable-based generation in the US. Wind generation did not increase through most of the 1990s, but then soared from 3 gigawatt hours in 1998 to 27 gWh in 2006, capped by a 44% increase in 2006.

Australia, where wind accounts for only 1% of the national energy mix, last year undertook an initiative to speed siting decisions for wind farms. Wind remains largely a rich-world energy source. Among developing countries, only India has significant production of wind energy.

The cost-effectiveness of wind generation depends heavily on two factors, the wind at the generating site and the distance between the generating site and the consumption location. The latter is a particular problem in the US, as many of the most desirable locations for wind farms are in places such as North Dakota and West Texas, relatively far from major urban areas.

Wind generating costs are as much as $0.08 per kWh in areas with relatively weak average winds, but as low as $0.06 per kWh in places where winds are higher and more reliable. The irregularity of wind also requires reserve capacity to assure supply, but this is lower than commonly believed because the variability of wind across an entire generating system is much lower than at any specific location. Studies in Europe indicate that non-wind capacity on the order of 2-8% of wind power capacity is required to protect against a potential lack of wind output.

Wind energy is a relatively mature technology, and technological improvements are expected to result in only minor cost reductions. However, the increasing number of wind turbine installations is bringing economies of scale that will hold down unit costs. In addition, a large proportion of future wind farm development is expected to

3. European Wind Energy Association, "Response to the European Commission's Green Paper," September 2006.

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occur offshore, where wind tends to be more reliable, leading to lower costs per unit of electricity.

Regulatory Drivers

Like other renewable technologies, wind benefits from a variety of government incentives. In the US, the federal Wind Energy Production Tax Credit, which expires at the end of 2008, provides operators of wind facilities with a credit of $.019 per kWh. The credit represents a significant risk for investors, as it has expired several times since its inception in 1992; although we expect it to be renewed, there may well be an interim period during which no credit is in place. Federal tax law also provides for rapid depreciation of wind facilities. The 2005 energy bill permits electric cooperatives, public power systems, and Indian tribes to issue Clean Renewable Energy Bonds, which effectively provide a financial subsidy for construction of wind and certain other renewable generation. In the absence of the tax credit and other subsidies, in our opinion, wind energy would generally be an unattractive investment under current conditions.

Some states also offer incentives for wind generation. North Dakota, which is encouraging development of large wind-turbine farms, has eased regulation of new wind farms and reduced property taxes on equipment. New York, which is promoting small-scale wind installations at homes, schools, and businesses, offers cash incentives of up to $100,000 per installation. About a dozen states exempt wind-energy systems from sales tax.

The most powerful government support for wind energy, in both the United States and Europe, has come from requirements that electric utilities purchase a specified proportion of their power from renewable sources. As wind is among the lowest-cost sources of renewable generation in many parts of the world, such requirements work in wind energy's favor. The energy bill now under consideration in Congress may well incorporate a national standard for utility purchases of renewable energy. If approved, this would probably stimulate additional growth of wind generation.

Wind is also likely to be a major beneficiary as governments impose costs on greenhouse-gas emissions to combat climate change. We believe that a cost of about $20 per metric ton of carbon dioxide emitted would make wind energy fully competitive with coal-fired power, without government subsidies. We anticipate that the average cost of carbon dioxide emissions in the EU over the 2008-2012 period will exceed this threshold. However, we do not expect the cost of carbon dioxide emissions in the US to reach the $20 per ton level until late in the next decade.

Key Strengths

Strong Secular Growth: The International Energy Agency expects generation from wind energy to rise from 82 gWh in 2004 to 1,440 in 2030, an increase of 18 times. The US Department of Energy expects US wind generation to increase from 27gWh last year to 50 gWh by 2014, but then projects no further increase through 2030; these projections, however, assume that the federal tax credit for renewable generation will not be renewed and that there will be no cost imposed on carbon dioxide emissions.

Second-Cheapest Source of Alternative Energy: The cost of producing wind energy has come down to $0.06-$0.08/kWh from $0.40/kWh in 1980. This makes wind one of the cheapest sources of alternative energy (after hydroelectric and

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biomass). Cost may decline further as more wind farms are built in offshore zones with reliable winds.

Already Commercial: Wind is a proven energy source and the technology is reliable and well understood.

No Greenhouse-Gas Emissions: Wind turbine operation produces no carbon dioxide, so wind will benefit as carbon costs drive up the cost of fossil fuels.

Key Weaknesses:

Limited to Ideal Geographical Areas: The generation of electricity is dependent on wind and wind speeds. This limits its use to the locations with favorable conditions. Even then, wind turbines have lower utilization rates (25-40%) than conventional power plants (40-80%).

Relatively High Transmission Costs. At least in the US, the most efficient locations for wind farms tend to be located at a considerable distance from major cities, resulting in additional infrastructure needs and greater loss of power during transmission.

Uneconomic at Small Scale. Large wind farms produce electricity more cheaply than small ones, and technological innovation will be required to make wind competitive for local use or isolated installations.

Environmental Impacts: High turbine towers on hilltop locations are efficient from a production standpoint, but are more prone to generate complaints about "visual pollution." Spinning turbine blades can be deadly to certain birds, and produce enough noise to be bothersome in the immediate vicinity.

Key Players & Recent Performance

We identify two public companies in Figure 26 that have significant exposure to wind energy, along with six private companies, Zilka Renewables, enxco inc., Clipper Wind, UPC Wind Partners, Horizon Wind Energy, and Cielo Wind Power. The new addition to the Wind portfolio is Wind Energy America (WNEA/Not Covered), which acquires and builds wind farm assets in the US. McKenzie Bay was excluded from the portfolio for this update due to a significant stock price decline to $0.09. ZOLT and MKBY have at least 25% of sales coming from wind energy/equipment production or an explicit commitment from management to work towards development of wind energy. The Wind energy space continues to be a difficult place to gain equity exposure in the US market as most companies with wind exposure are either parts of large conglomerates (such as General Electric) or operate overseas.

Figure 26: Wind Energy Companies Sorted by Market Cap – Key Stats

Company Name	Ticker	Price	Market Cap	EV	Sales LTM	EV/S	P/B
Zoltek Companies Inc	ZOLT	$40.19	$1,177	$1,171	$92	10.0x	6.9x
Wind Energy America	WNEA	$2.15	$23	$23	$1	NM	34.5x

Source: Factset, JPMorgan.
Priced as of June 26, 2007.

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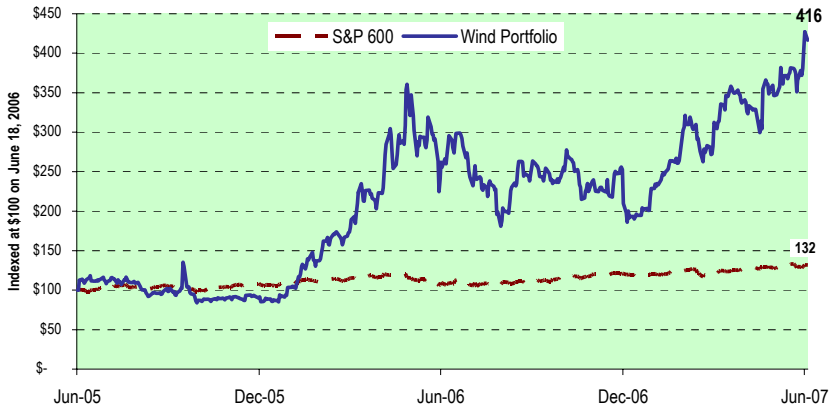
Figure 27 below shows how the wind energy portfolio has performed versus the S&P 600 over the past two years. The Wind Energy portfolio here is market-cap weighted, and is composed of two stocks shown in Figure 26 above. The portfolio is trading at a 2-year high and it is up over 300% during this period. The portfolio is highly levered to Zoltek's performance, which produces carbon-fiber used in blades for the wind turbines.

Figure 27: Wind Energy Portfolio Price Performance vs. S&P 600



Source: Factset, JPMorgan.
Portfolio priced as of June 18, 2007.

Wind Energy Timeline

1900-1950 – Windmills used for pumping water and remote electric generation.

1950s – First modern AC wind turbine built in Denmark, called the Gedser.

1974-75 – MOD-0, a horizontal axis wind turbine developed by NASA.

1977-81 – MOD-1, MOD-2 developed and tested. MOD-2 was the first wind turbine with capacity >1 MW.

1978 – PURPA mandated purchase of electricity from certain qualifying facilities meeting certain criteria of energy source and efficiency.

1980s – Wind generation costs declined by fourfold.

1983 – ISO4 contracts in California encouraged installation of wind turbines.

1990 – California wind capacity at 2 GW.

1990s – Costs of wind energy production reduced by half.

1992 – Energy Policy Act authorized a performance tax credit of $0.015/kWh.

1993 – 33M-VS, the first variable speed wind turbine, made commercially available.

1995 – DOE's wind energy program, funded at $49mm, led to new turbines with energy costs of $0.05/kWh.

2003 – US wind industry output reached 6300MW; growth rate during the period 1999-2003 was 28%.

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2003 – World's first large scale offshore wind energy farm developed in Denmark, producing 170MW.

2005 – US energy bill extended the expiry date for production tax credits for wind farms to December 31, 2007.

2006 – US Department of Energy reports that wind capacity rose 44% in a single year. Wind generation did not increase through most of the 1990s, but then soared from 3 gigawatt hours in 1998 to 27 gWh in 2006, capped by a 44% increase in 2006.

Source: EIA, American Wind Energy Association, ICCEPT.

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Biomass Energy

Qualitative Score	2		
	Above Avg.	Average	Below Avg.
Expected Growth	1	0	-1
Cost Structure	1	0	-1
Development Stage	1	0	-1
Addressable Market	1	0	-1
Developing Momentum	1	0	-1
Sum Total	**2**		

Biomass energy is generated from wood and municipal solid waste. The energy can be generated either by direct combustion or other processes, such as anaerobic digestion and fermentation that convert solid waste to combustible gases. Biomass is the most widely used form of alternative energy worldwide, accounting for 7% of total global energy consumption. Overall demand for biomass energy is expected to fall as developing countries shift from burning fuel at the household level to large-scale electric generation, but the use of biomass as a generating fuel is expected to increase.

In the United States, biomass accounted for 44% of electric generation from renewable sources other than hydro in 2006, with trash-to-energy plants accounting for 57% of biomass generation. Biomass generation is expected to grow more slowly than most other forms of renewable generation, in the US and around the world, largely because many of the low-cost biomass feedstocks are already in use.

The cost of producing electricity from biomass depends heavily on fuel costs and accounting methods. European studies imputing a negative cost of solid waste — the implication being that the presence of a biomass generating facility eliminates the cost of operating a landfill — come up with generating cost estimates as low as $0.02 per kWh. Many wood-products companies operate power or combined-heat-and-power plants using wood waste from their own operations, also leading to very low-cost production. More costly biomass fuel sources, however, can result in generating costs of more than $0.06 per kWh, leaving biomass uncompetitive with coal in the absence of subsidies. Future efficiency gains are likely to be achieved mainly by construction of new biomass gasification plants.

Key Strengths:

Strong Secular Growth: Current high fossil-fuel prices support consumption of biomass energy given that it is the cheapest source of renewable energy available today. In the United States, according to US Department of Energy projections, electric production from wood and other biomass will increase 263% between 2006 and 2010, although generation from municipal waste will grow only marginally.

Cheapest Source of Alternative Energy: If the waste-disposal savings are taken into consideration, biomass is by far the cheapest source of renewable electric generation.

Already Commercial and Reliable: Biomass is a proven source of alternative energy. Because the supply of source material is very predictable and stable, biomass, unlike many other renewables, can be used to meet baseload energy needs.

Gasification Could Increase the Addressable Market: Gasification is expected to be the fastest form of biomass generation. This technology is relatively immature, creating opportunities for innovative suppliers.

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Diversifies Fuel Alternatives for Utilities – Biomass can be co-fired with coal in many generating plants, allowing utilities to shift fuel sources depending upon relative costs.

Key Weaknesses:

High Capital Costs: Biomass generating plants, most notably trash-to-energy plants, can be quite costly. In the US, where landfill space remains relatively inexpensive, using trash as generating fuel may not be the most cost-effective method of trash disposal for local governments.

Low Developing Momentum: The technology has been around for decades, and aside from gasification, no major technological breakthroughs are expected.

Key Players & Recent Performance

We identify three public companies in Figure 28 that have significant exposure to biomass energy, along with two private companies, Heatwerks, Inc (Waste to Energy), and Stirling Power, LLC. (Biogas). The new addition to the Biomass portfolio is US Energy Systems, which owns and operates 23 landfill gas to energy projects in the United States. These companies have at least 25% of sales coming from biomass energy/equipment production or an explicit commitment from management to work towards development of biomass energy.

Figure 28: Biomass Energy Companies Sorted by Market Cap – Key Stats

Company Name	Ticker	Price	Market Cap	EV	Sales LTM	EV/S	P/B
Covanta Holding Corp	CVA	$24.72	$3,802	$5,749	$1,269	4.4x	4.5x
Environmental Power Corp	EPG	$8.85	$87	$98	$54	1.8x	4.8x
US Energy Systems Inc	USEY	$1.03	$22	$216	$21	10.1x	0.6x

Source: Factset, JPMorgan.
Priced as of June 26, 2007.

Figure 29 below shows how the Biomass Energy portfolio has performed versus the S&P 600 over the past two years. The biomass energy portfolio here is market-cap weighted, and is composed of the three stocks shown in Figure 28 above. The portfolio has steadily increased during the last two years (up 122%). Despite the positive outlook for Biomass energy and strong equity performance, this space continues to be limited to only three public companies in Figure 28 above.

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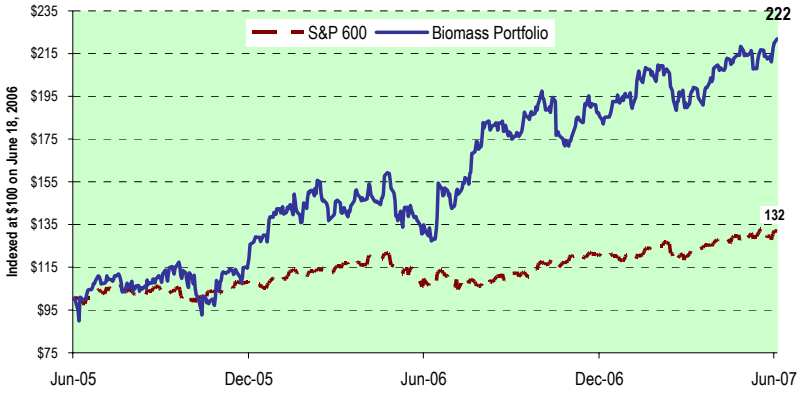
Figure 29: Biomass Portfolio Price Performance vs. S&P 600



Source: Factset, JPMorgan.

Portfolio priced as of June 18, 2007.

Biomass Energy Timeline

1890 – Wood as one of the main fuel supplies for commercial, residential and transportation uses.

1898 – Energy Recovery from garbage incineration started in New York City.

1930 – Wood displaced by kerosene and fuel oil for some commercial, residential and transportation uses.

1970s – First generation research in construction of refuse-derived fuel systems and pyrolysis units in the late 1970s.

1973 – Wood use at an all time low of 50 mm tons/ year. Oil embargo.

1978 – US Navy, Wheelabrator, and Ogden acquired European mass-burn technologies.

1978 – PURPA mandated purchase of electricity from certain qualifying facilities meeting certain criteria of energy source and efficiency.

1984 – Startup of Burlington Electric wood-fired, 50 MW plant.

1985 – Standard offer #4 contracts begin. California biomass grew to 850 MW.

1986 – Tax Reform Act eliminated the tax-free status of MSW power plants financed with Industrial Development Bonds, reduced accelerated depreciation, and eliminated the 10% tax credit.

1989-90 – First trials of direct wood-fired gas turbines conducted by Aerospace Research Organization.

1990 – Biomass generating capacity at 6,000MW.

1992 – Rise in biomass prices to $55/ton.

1995 – Half of California's biomass industry shut down through sale or buyout of their Standard Offer #4 contracts.

2000 – Biomass R&D Act of 2000 passed. Set specific targets for biomass use in power generation, bio-fuels for transportation, and bio products.

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2002 – Farm Bill of 2002 mandated federal procurement of bio-based products when they are available and are equivalent to alternatives from a fossil fuel base (the "buy bio" program).

2005 – Energy Policy Act of 2005 passed. Extended credit period for open loop biomass from 5 to 10 years. EPACT also provided for loan guarantees for gasification projects meeting certain criteria of fuel combination and emissions.

Source: EIA, JPMorgan.

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Fuel Cells

Qualitative Score	2		
	Above Avg.	Average	Below Avg.
Expected Growth	1	0	-1
Cost Structure	1	0	-1
Development Stage	1	0	-1
Addressable Market	1	0	-1
Developing Momentum	1	0	-1
Sum Total	2		

Fuel-cell technologies convert hydrogen and oxygen into energy. These systems can be integrated with hydrogen production and storage to provide fuel for electricity generation, power for motor vehicles, and heat generation for residential and commercial use. The most prominent fuel cell technologies are phosphoric acid fuel cells (commercially available), molten carbonate fuel cells (to be commercialized soon), and solid oxide fuel cells (to be commercialized)[4].

The fixed costs of fuel cells for household or business electricity production have come down from about $60,000/kW in the mid seventies to less than $4,000/kW today, and significant further cost reductions are in prospect. Nonetheless, costs will remain well above those of other forms of electricity generation for the foreseeable future, according to government estimates. In vehicular applications, fuel cells are still far from competitive. Hydrogen fuel cell vehicles cost an average of $44,000 more than corresponding gasoline-powered vehicles, and the cost of hydrogen provides no operating-cost savings over gasoline. Fuel-cell vehicles may be practical only for limited fleet applications in which vehicles return to a base to take on hydrogen, as the cost of establishing a widespread hydrogen distribution network may be prohibitive. [5]

Fixed costs of fuel cells are likely to remain high for three key reasons: (1) high R&D requirements, (2) lack of economies of scale; and (3) lack of hydrogen infrastructure and distribution channels. As a result of these cost issues, fuel-cell use over the next few years is likely to be confined to a limited number of applications, such as backup power supply systems for telecommunications and emergency lighting.

In the United States, the market for fuel cells is driven almost entirely by an investment tax credit of $1,000 per installed kW or 30% of project cost, whichever is less, plus similar credits in various states. The federal credit is scheduled to expire at the end of 2008, but is likely to be extended by pending energy legislation.

Key Strengths:

Large Addressable Market: Fuel cell technology can potentially be applied to a multitude of uses — stationary and portable devices, power and heat applications, and across geographies.

Strong Developing Momentum: Current technology advances focus on portability, hydrogen storage, efficiency gains, and land-fill gas treatment.

4 IEA. World Energy Investment Outlook, 2003.
5. National Renewable Energy Laboratory, "Projected Benefits of Federal Energy Efficiency and Renewablel Energy Programs," March 2007.

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Low Maintenance Requirements/Costs: Although maintenance and reliability of fuel cells have not been examined on a long-term basis, maintenance cost of fuel cells used for electrical purposes is expected to be as low as $0.005- $0.01 per kWh[6].

High energy efficiency: Fuel cells can achieve up to 45% efficiency in electricity generation, and can achieve 80% efficiency in combined electricity and heat production.

Key Weaknesses:

High Fixed Costs: Compared with competing traditional and alternative sources of energy, fuel cells remain an expensive option in almost all applications due to high upfront costs and the lack of a hydrogen distribution network. In automotive use, fuel cells are about four times more expensive than internal combustion engines.

Transitional Stage: Fuel cell technology is still in its early stages of development. Significant technological progress will be required to lower the cost and improve the efficiency of fuel cells before they become mainstream.

Hydrogen Dependence: Hydrogen production remains expensive and requires fossil fuels, decreasing the attraction of fuel-cell technology. A hydrogen delivery infrastructure would be required to allow widespread use of fuel cells in vehicles.

Greenhouse gases emissions: Fuel cells cause lower total emissions per unit of electricity than coal generating plants or microturbines, but the hydrogen production process can cause significant carbon dioxide emissions.

Key Players & Recent Performance

We have identified ten public companies in Figure 30 that have significant exposure to fuel cells, along with four private companies, Astris Energy Inc., Fideris Inc, H2Gen Inc., and Polyfuel Inc. These companies have at least 25% of sales coming from fuel cells development/production or an explicit commitment from management to work towards development of fuel cells.

Figure 30: Fuel Cells Companies Sorted by Market Cap – Key Stats

Company Name	Ticker	Price	Market Cap	EV	Sales LTM	EV/S	P/B
Ballard Power Systems Inc(US$)	BLDP	$4.97	$570	$387	$50	7.6x	1.9x
FuelCell Energy Inc.	FCEL	$7.66	$520	$394	$33	10.9x	2.6x
Medis Technlogies	MDTL	$13.45	$470	$458	$0	NM	4.6x
Plug Power Inc.	PLUG	$2.92	$254	-$4	$8	-0.5x	0.9x
Hoku Scientific Inc	HOKU	$12.08	$199	$178	$5	33.2x	7.7x
Hydrogenics Corp(US$)	HYGS	$1.21	$111	$63	$30	2.0x	1.9x
HydroGen Corp.	HYDG	$4.49	$57	$34	$1	55.0x	2.1x
Mechanical Technology Inc.	MKTY	$1.28	$49	$33	$8	3.7x	2.7x
Distributed Energy Systems Corp	DESC	$1.13	$45	$37	$45	0.8x	1.2x
Millennium Cell Inc	MCEL	$0.63	$35	$42	$0	191.7x	NA

Source: Factset, JPMorgan.

Note: Priced as of June 26, 2007.

[6] California Electricity Commission Distributed Energy Resource Guide, http://www.energy.ca.gov/distgen/equipment/fuel_cells/cost.html

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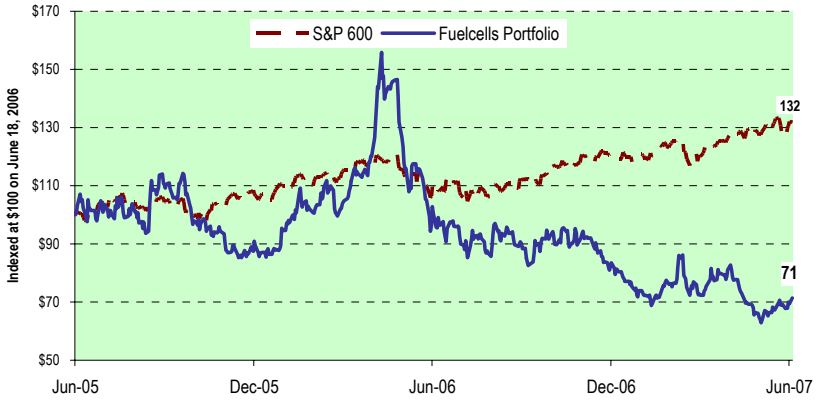
Figure 31 below shows how the Fuel Cells portfolio has performed versus the S&P 600 over the past two years. The Fuel Cells portfolio here is a market-cap weighted portfolio and is composed of the ten stocks shown in Figure 30 above. The Fuel Cell portfolio is down 54.2% since hitting a peak in April 2006 and it is among the worst performing portfolio in Alternative Energy. The lackluster equity performance is largely due to a high cash burn from most companies in the portfolio and continued equity issuance to fund operations.

Figure 31: Fuel Cell Portfolio Price Performance vs. S&P 600



Source: Factset, JPMorgan.
Portfolio priced as of June 18, 2007.

Fuel Cells Timeline

1970s – DOE's Office of Fossil Energy and several fuel cell developers collaborated on the development of the phosphoric acid fuel cell (PAFC) system.

1980s – Emphasis shifted to molten carbonate and solid oxide fuel cell systems.

1996 – Department of Defense's Climate Change Fuel Cell Program provides grants of $1,000/kilowatt to purchasers of fuel cell power plants.

2000 – Department of Energy committed $135 million in research funding, including projects in advanced fuel cell, hydrogen and gasoline engines with extremely low oxides of nitrogen (NOx) emissions.

2005 – EPACT provided for loan guarantees for fuel cell manufacturers, tax credits for fuel cell purchasers.

2007 – Boeing researchers and industry partners are planning to conduct experimental flight tests of a manned airplane powered only by a fuel cell and lightweight batteries.

Source: EIA, JPMorgan

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Hybrid Electric Vehicles (HEV)

Qualitative Score		2	
	Above Avg.	Average	Below Avg.
Expected Growth	1	0	-1
Cost Structure	1	0	-1
Development Stage	1	0	-1
Addressable Market	1	0	-1
Developing Momentum	1	0	-1
Sum Total		2	

A hybrid vehicle's electric motor is energized by batteries, which produce power through a chemical reaction. The battery is continuously recharged by a generator that is driven by the internal combustion engine. Hybrids may have a parallel design, a series design, or a combination of both:

- In a parallel design, the energy conversion unit and electric propulsion system are connected directly to the vehicle's wheels. The primary engine is used for highway driving while the electric motor provides added power during hill climbs, acceleration, and other periods of high demand.

- In a series design, the primary engine is connected to a generator that produces electricity. The electricity charges the batteries, which drives an electric motor that powers the wheels.

Hybrid vehicles have been in the market since 2000. On average they can help increase miles per gallon (MPG) in city driving by up to 50%, although they may not offer superior fuel efficiency in long-distance driving.[7] Annual sales in the US doubled in 2005 and rose an additional 28% in 2006 to 254,545 units, according to R.L. Polk. In the first five months of 2007, US hybrid sales were 53% above the 2005 level. Hybrid sales in the US have been supported not only by high gasoline prices, but also by a variety of tax incentives for buyers at the state and federal levels. In addition, California permits hybrid vehicles that meet a 45-mile-per-gallon efficiency standard to use carpool lanes on many freeways.

The energy bill approved by the Senate on June 21 includes a provision setting aside government research funds for automotive component suppliers with fewer than 500 workers. This may benefit small companies and start-ups expert in hybrid technology.

Key Strengths:

Strong Secular Growth: Growth trends are strong, although the June 4 announcement that Honda will discontinue the hybrid version of its Accord sedan indicates that not all hybrid products will find consumer acceptance.

Large Addressable Market: Hybrid technology is a clear play in the transportation market, which accounts for 27% of total energy consumption in the US. This technology has also gained large support from vehicle emissions reduction initiatives around the world.

Strong Developing Momentum: Plug-in hybrids (which are expected to help improve gasoline mileage), and cheaper rechargeable batteries should continue to drive adoption.

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7 Technology Snapshot featuring the Toyota Prius, Office of Energy Efficiency and Renewable Energy
http://www.fueleconomy.gov/feg/tech/TechSnapPrius1_5_01b.pdf

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Key Weaknesses:

Higher Costs – It is estimated that hybrid cars cost up to 35% more than standard cars. However, tax preferences offset some of this increase at the consumer's end. Additionally, as car manufacturing companies begin to gain production efficiencies and economies of scale, it is likely that the cost differential will narrow.

Higher Weight – Hybrid vehicles have to carry the additional weight of an electric motor, a generator, and batteries.

Lower-power Engine – A hybrid's engine can provide only up to 20 horsepower, as compared with 100 to 200 horsepower for a conventional gasoline engine.

Key Players & Recent Performance

We have identified four public companies in Figure 32 that have significant exposure to hybrid vehicles. These companies have at least 25% of sales coming from hybrid vehicles/hybrid vehicles technologies or have explicit commitment from management to work towards development of hybrid vehicles/ hybrid vehicles.

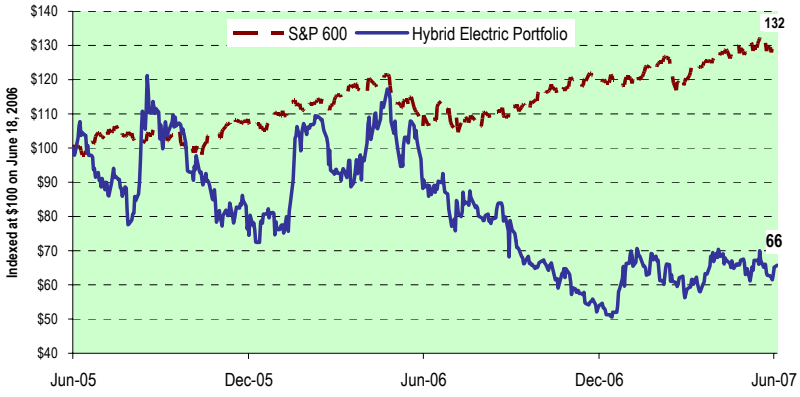
Figure 32: Hybrid Vehicles Companies S orted by Market Cap – Key Stats

Company Name	Ticker	Price	Market Cap	EV	Sales LTM	EV/S	P/B
UQM Technologies	UQM	$4.24	$107	$98	$6	17.0x	8.8x
Ener1 Inc	ENEI	$0.23	$101	$155	$0	NM	NA
Quantum Technology Corp	QTWW	$1.53	$100	$116	$158	0.7x	1.1x
Enova Systems Iinc.	ENOV	$6.60	$98	$93	$2	32.0x	14.5x

Source: Factset, JPMorgan.
Priced as of June 26, 2007.

Figure 33 below shows how the Hybrid Electric/Fuel Cell Vehicles portfolio has performed versus the S&P 600 over the past two years. The Hybrid Vehicles portfolio is composed of the four stocks shown in Figure 32 above. This portfolio has underperformed the S&P 600 in almost all periods during the last two years.

Figure 33: Hybrid Vehicles Portfolio Price Performance vs. S&P 600



Source: Factset, JPMorgan.
Portfolio priced as of June 18, 2007.

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Hybrid Vehicles Timeline

1870 - Sir David Salomon developed a car with a light electric motor and very heavy storage batteries.

1897 - The Pope Manufacturing Company of Hartford, Connecticut, built around 500 electric cars over a two-year period.

1900 - American car companies made 1,681 steam, 1,575 electric and 936 gasoline cars.

1904 – Henry Ford started production of gas-fired vehicles.

1910 - Commercial built a hybrid truck which used a four-cylinder gas engine to power a generator, eliminating the need for both transmission and battery pack.

1966 - U.S. Congress introduced first bills recommending use of electric vehicles as a means of reducing air pollution.

1976 - U.S. Congress enacted Public Law 94-413, the Electric and Hybrid Vehicle Research, Development, and Demonstration Act of 1976. The objective was to work with the industry to improve batteries, motors, controllers and other hybrid-electric components.

1992 - Toyota Motor Corporation announced the "Earth Charter," a document outlining goals to develop and market vehicles with the lowest emissions possible.

1997 - Toyota Prius went on sale to the public in Japan. First-year sales were nearly 18,000 units.

1999 - Honda released the two-door Insight, the first hybrid car to hit the mass market in the United States.

2000 - Toyota Prius became the first hybrid four-door sedan available in the US.

2004 - To meet demand, Toyota increased Prius production from 36,000 to 47,000 for the US Market. In September, Ford released the Escape hybrid, the first American hybrid and the first SUV hybrid. The number of hybrid registrations increased 81% from 2003.

2005 – EPACT provided a tax credit for purchase of vehicles that employ hybrid/ fuel cell propulsion systems. The credit applies only to 60,000 units produced by a given manufacturer. It became effective after December 31, 2005.

2007 – The cost for electricity to power plug-in hybrids during all-electric operation in California is estimated to be approximately ¼ the cost of gasoline.

Source: EIA, JPMorgan.

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JPMorgan

Microturbines

Qualitative Score		1	
	Above Avg.	Average	Below Avg.
Expected Growth	1	0	-1
Cost Structure	1	0	-1
Development Stage	1	0	-1
Addressable Market	1	0	-1
Developing Momentum	1	0	-1
Sum Total		1	

Microturbines are small combustion turbines derived from the turbocharger technologies found in aircraft auxiliary power units. The technology has a short operating history, with the first commercial units coming to market during 1999. Microturbine units can be as small as a refrigerator and have output as low as 25 kW, making them suitable for environmentally sensitive locations. At the household and business level, microturbines could satisfy the owner's electric needs at most times, and could cover part of their cost by selling excess power into the utility grid. They can be used for stand-by power, peak shaving, and cogeneration applications.

Microturbines can be used with a wide variety of fuels, including natural gas, hydrogen, propane, diesel, landfill gas, vegetable oil, and even water. Attempts are being made to use microturbines in the transportation sector, in order to provide a lightweight and efficient fossil-fuel-based energy source for hybrid electric vehicles.

At their current stage of development, microturbines are not cost-competitive with other types of generation. Capital costs are relatively high at $700-$1,100 per kW, and microturbines are relatively inefficient in terms of converting fuel to electricity. Estimated generation costs, including a capital cost allowance, are $0.07-$0.11/kWh[8]. The US Department of Energy's Advanced Microturbines Program aims to lower the capital cost to under $500/KW, but $650 is a more realistic goal over the next few years. In the United States, a microturbine investment tax credit for business property owners provides a credit of $200 per kW or 10% of the installed cost, whichever is less.

Key Strengths:

Large Addressable Market: Microturbines have a wide range of applications, from on-grid to off-grid, from stationary to portable, and could play a key role in the transportation sector. Microturbines also benefit from being able to use a variety of fuels.

Reliability: Their ability to operate independently of the power grid makes microturbines particularly attractive in situations where supply reliability is a concern.

Low Maintenance: Most microturbine designs have few moving parts, and manufacturers are attempting to develop units that require maintenance no more than once a year.

High Developing Momentum: The DOE's Advanced Microturbines program is committed to bringing capital installation costs down by as much as 50%.

8 Congressional Budget Office, http://www.cbo.gov/showdoc.cfm?index=4552&sequence=3#table2.

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Key Weaknesses:

High Fixed Costs: Compared to most alternative and traditional energies, microturbines remain an expensive option due to their higher-than-average capital cost per unit of output.

Low Efficiency: Microturbines currently convert only about 20% of available energy to electricity, less than half the conversion ratio of modern coal power plants.

Key Players & Recent Performance

We have identified one public company with exposure to microturbines, Capstone Turbine Corp, and one private company, Elliott Energy Systems. These companies have at least 25% of sales coming from wind energy/equipment production or an explicit commitment from management to work towards development of microturbines.

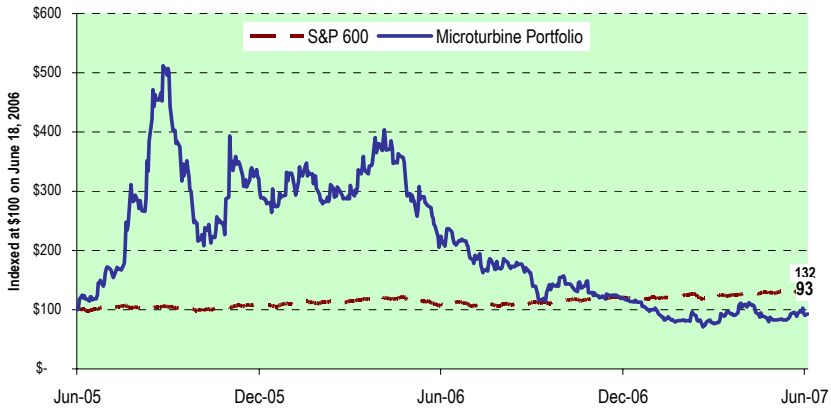
Figure 34: Microturbines Companies Sorted by Market Cap – Key Stats

Company Name	Ticker	Price	Market Cap	EV	Sales LTM	EV/S	P/B
Capstone Turbine Corp	CPST	$1.13	$118	$81	$23	3.6x	2.5x

Source: Factset, JPMorgan.
Priced as of June 26, 2007.

Figure 35 below shows how Capstone Turbine has performed versus the S&P 600 over the past two years. The performance of this stock is largely sentiment and newsflow driven. The stock is down 7% during the last two years and down 80% from its high in 2005.

Figure 35: Capstone Turbine Price Performance vs. S&P 600



Source: Factset, JPMorgan.
Portfolio priced as of June 18, 2007.

Microturbines Timeline

1998 – Capstone made the first commercially available microturbine.

2000 – Capstone shipped the first commercial unit of its C60 model.

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2000 – Advanced Microturbines Program started by DOE with aims of achieving higher efficiency (40%), lower emissions (NOx<7 PPM), higher durability (11k hours before maintenance), life of 45k hours, lower cost (<$500/KW), and greater fuel flexibility.

2002 – Ingersoll Rand made its first commercially available microturbine (MT70).

2002 – Capstone's 30KW and 60KW turbines were certified to comply with Rule 21 regarding interconnectivity with utility grid.

2007 – Capstone's MicroTurbine(TM) energy systems surpassed the 15 million-hour mark in documented runtime operation.

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Geothermal Energy

Qualitative Score		-1	
	Above Avg.	Average	Below Avg.
Expected Growth	1	0	-1
Cost Structure	1	0	-1
Development Stage	1	0	-1
Addressable Market	1	0	-1
Developing Momentum	1	0	-1
Sum Total		-1	

Geothermal energy is a proven resource for direct heat and power generation. Geothermal energy, drawing on underground sources of hot water, has been used for over a century for generation of electricity. Geothermal energy currently accounts for about 8% of global renewable generating capacity, excluding hydro, and for about 15% of production. It accounts for a significant share of power production only in Iceland (17%) and Italy (2%). Italy, with 791 megawatts of generating capacity, has by far the largest installed base.

Geothermal sources are used for district heating in many locations. New technology, involving the use of heat pumps and/or heat exchangers, makes it feasible to heat individual buildings from geothermal sources immediately below.

In the United States, geothermal provided 16 billion kWh of electricity last year, on a par with generation from non-trash biomass plants. The US Department of Energy projects that US geothermal generation will increase at only a 1.6% annual rate through 2030, largely because of a lack of suitable sites. Most of the growth potential is in California and Nevada.

The biggest factors limiting growth in geothermal energy are the scarcity of sites and the capital cost of development. Future cost reductions will be dependent on cheaper drilling techniques (drilling typically accounts for half of the capital costs), remote detection of producing zones during exploration, well-stimulation measures to extract heat more efficiently, and improvements in power conversion technologies [9].

Key Strengths:

Improving Cost Structure: Technological improvements have driven costs down significantly, with some new US plants producing electricity from geothermal for less than $0.05 per kWh, including capital costs.

Already Commercial: The technology is proven and has been commercial for decades.

Reliability: Geothermal resources provide a highly reliable source of energy. Continuous availability makes geothermal suitable for baseload generation.

Key Weaknesses:

Growth Constrained by Availability of Resources: The limited availability of geothermal sites is a clear limiting factor for this source of alternative energy. Costs depend on the temperature of the water at a geothermal site, so some locations with geothermal availability will have relatively high generating and heat costs.

Limited Addressable Market: The scarcity of geothermal sites also limits the addressable market for this technology and its applications. Some of the countries where geothermal resources are most abundant, such as Iceland and Sweden, have

9 Renewable Energy Annual 2005.

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small populations and are likely to see limited growth in electricity demand, unless geothermal resources are used to attract energy-intensive industries.

Low Developing Momentum: Geothermal is, along with hydropower, among the most mature alternative energy sources in the market.

Environmental Impact: Geothermal wells often release gases such as methane, hydrogen sulphide, and carbon dioxide, which may prove problematic in the face of increasing constraints on greenhouse-gas emissions.

Key Players & Recent Performance

We have identified two public companies in Figure 36 that have significant exposure to geothermal energy, along with three private companies, US Energy Partners, LLC, Caithness, Inc., and Cal Energy (a subsidiary of Mid American Energy Holdings Inc.). These companies have at least 25% of sales coming from geothermal energy/equipment production or an explicit commitment from management to work towards development of geothermal energy.

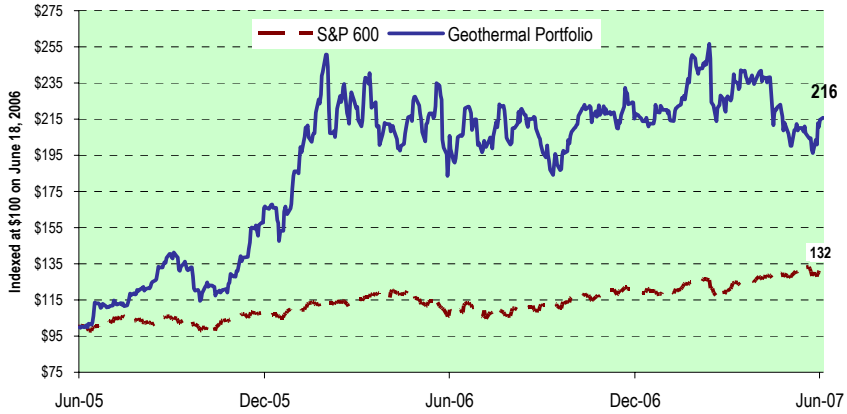
Figure 36: Geothermal Energy Companies Sorted by Market Cap – Key Stats

Company Name	Ticker	Price	Market Cap	EV	Sales LTM	EV/S	P/B
Ormat Technologies Inc	ORA	$35.55	$1,355	$1,737	$269	6.4x	3.1x
Nevada Geothermal Power Inc.	NGLPF	$0.79	$42	NA	NA	NM	NA

Source: Factset, JPMorgan.
Priced as of June 26, 2006.

Figure 37 below shows how the Geothermal Energy portfolio has performed versus the S&P 600 over the past two years. The Geothermal energy portfolio here is market-cap weighted, and is composed of the two companies shown in Figure 36 above. The Geothermal Portfolio has experienced lower volatility than all other Alternative Energy portfolios since it is more levered to Ormat Technologies, which is a more mature company than others in the Alternative Energy Portfolio.

Figure 37: Geothermal Portfolio Price Performance vs. S&P600



Source: Factset, JPMorgan.
Portfolio priced as of June 18, 2007.

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Geothermal Energy Timeline

1300s –The world's first district heating geothermal system was started in France.

1904-05 – Conversion of high-grade hydrothermal resources to electricity began in Italy.

1913 – The first power plant was commissioned at Larderello.

1960 – The first commercial-scale development tools were placed in California at The Geysers, a 10-megawatt unit owned by Pacific Gas & Electric.

1961 – The first geothermal meeting was held to report on geothermal energy utilization (UN Conference on new sources of energy).

1970 – Injection of spent geothermal fluids back into the production zone began as a means to dispose of waste water and maintain reservoir life.

1970-80 – Highest growth rate for world geothermal electricity production at 12.7%.

1972 – Technology improvements led to deeper reservoir drilling and access to more resources.

1978 – U.S. Department of Energy (DOE) funding for geothermal research and development was $106.2 million (1995 dollars) in fiscal year 1978, marking the first time the funding level surpassed $100 million.

1980-90 – Worldwide geothermal energy electricity production grew at 10.2%.

1980 – The first commercial-scale binary plant in the United States, installed in Southern California's Imperial Valley, began operation in 1980.

1982 – Geothermal (hydrothermal) electric generating capacity, primarily utility-owned, reached a new high level of 1,000 megawatts.

1990 – DOE funding for geothermal energy research and development declined throughout the 1980s, reaching its low point ($15 million).

1991 – The world's first magma exploratory well was drilled in the Sierra Nevada Mountains to a depth of 7,588 feet.

1994 – California Energy became the world's largest geothermal company through its acquisition of Magma Power. Near-term international markets gained the interest of U.S. geothermal developers.

1995 – Worldwide geothermal capacity reached 6,000 megawatts.

2003 – Total geothermal heat pump shipments in the United States declined to 36,439 from 37,434 in 1997.

2006 – A report by MIT concluded that it would be affordable to generate 100 GWe or more by 2050 in the United States alone, for a maximum investment of 1 billion US dollars in research and development over 15 years.

2006 – Geothermal power is generated in over 20 countries around the world.

Source: EIA, World Status of Geothermal energy Use, 1995-1999 (Lund, Geoheat Center, University of Oregon)

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Hydro Energy

Qualitative Score		-1	
	Above Avg.	Average	Below Avg.
Expected Growth	1	0	-1
Cost Structure	1	0	-1
Development Stage	1	0	-1
Addressable Market	1	0	-1
Developing Momentum	1	0	-1
Sum Total		-1	

Hydroelectric energy is a renewable energy that is dependent upon the hydrologic cycle. Worldwide, it accounts for approximately 16% of electric generating capacity. Individual countries' use of hydroelectric generation varies greatly, depending largely upon the availability of suitable dam sites. China now produces more hydropower than any other country, although Norway has by far the greatest dependence on hydroelectric generation (Figure 38)

Figure 38: Leading hydroelectric producers, 2004

	Terawatt hours	Share of world total	Share of domestic generation
China	354	12.6%	16.1%
Canada	341	12.1%	57.0%
Brazil	321	11.4%	82.8%
United States	271	9.7%	6.5%
Russia	176	6.3%	18.9%
Norway	109	3.9%	98.8%
Japan	94	3.3%	8.8%
India	85	3.0%	12.7%
Venezuela	70	2.5%	71.0%
Sweden	60	2.1%	39.6%
Rest of World	927	33.1%	

Source: International Energy Agency.

Hydroelectric energy once accounted for 40% of the electricity generated in the US, but today it represents less than 7%, due largely to the scarcity of suitable untapped sites. US hydropower generation is likely to remain stable over the next two decades, and may even decline slightly as environmental concerns lead to the removal of some smaller dams with power turbines.

Most new hydropower installations have occurred in China (which has added 7-8 gigawatts of capacity annually) and other developing countries. Future development depends largely on environmental regulations, government supports, and the availability of loans from the World Bank and other multilateral institutions. Significant cost reductions and gains in production efficiency are not expected given the maturity of the technology and the diminishing quality of available dam sites.

Key Strengths:

Proven and Largely Commercial: The technology has been around for decades and it is the second most utilized renewable energy in the world.

Very Low Operating Costs: Although dam construction is very costly, the hydroelectricity has the lowest marginal generating cost of any power source.

Key Weaknesses:

Constrained Growth: Growth is contained by environmental and displacement issues that large hydropower projects cause.

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Limited Addressable Market: The once-promising potential of small-scale dams has largely vanished due to environmental concerns.

Scarcity of Ideal Geographical Locations: There are a limited number of potential development sites, as this source of alternative energy is most cost efficient in large-scale projects with very specific geographic attributes.

Key Players & Recent Performance

We have identified two public companies in Figure 39 that have significant exposure to hydro energy. These companies have at least 25% of sales coming from hydropower production or an explicit commitment from management to work towards development of hydropower.

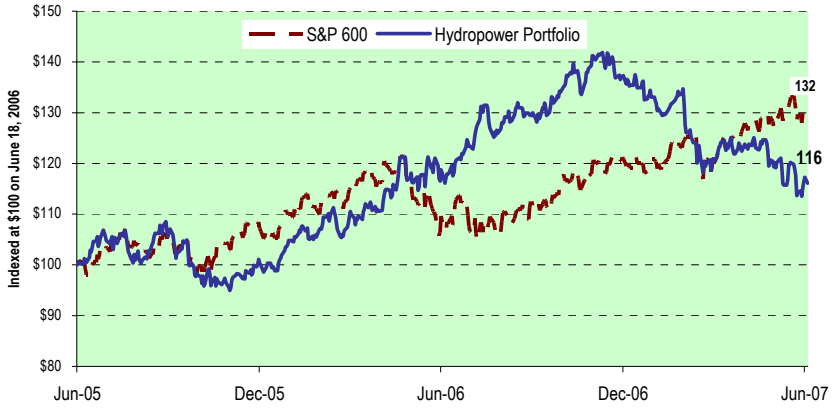
Figure 39: Hydro Power Companies Sorted by Market Cap – Key Stats

Company Name	Ticker	Price	Market Cap	EV	Sales LTM	EV/S	P/B
Idacorp Inc.	IDA	$31.83	$1,398	$2,457	$926	2.8x	1.2x
Avista Corp	AVA	$21.42	$1,130	$2,098	$1,506	1.4x	1.2x

Source: Factset, JPMorgan.
Priced as of June 26, 2007.

Figure 40 below shows how the Hydropower portfolio has performed versus the S&P 600 over the past two years. The hydro energy portfolio here is market-cap weighted, and is composed of the two stocks shown above. After outperforming the S&P 600 during 2006, this portfolio has been a poor performer YTD along with the rest of the utilities sector. The portfolio is up 16% during the last two years but well off its peak level in December 2006.

Figure 40: Hydropower Portfolio Price Performance vs. S&P 600



Source: Factset, JPMorgan.
Portfolio priced as of June 18, 2007.

Hydro Energy Timeline

1700s – Mechanical hydropower used in America for milling and pumping.

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1880 – In Grand Rapids, Michigan, a brush arc light dynamo powered by water turbine was used to provide theater and storefront illumination.

1881 – In Niagara Falls, New York, a brush dynamo was connected to a turbine in Quigley's flour mill to light city street lamps.

1882 – In Appleton, Wisconsin, the first hydroelectric station to use Edison system was the Vulcan Street Plant.

1889 – Willamette Falls station was the first constructed AC hydroelectric plant.

1900 (early) – Hydropower accounted for more than 40% of the electricity production in the US.

1906 – A fully submerged hydroelectric plant was built inside Ambursen Dam.

1920 – Congress enacted Federal Water Power Act, which established the Federal Power Commission. FPC was responsible for licensing non federal hydroelectric projects.

1922 – First time a hydroelectric plant was built specifically for peaking power.

1930 – FPC was reorganized as an independent Commission, composed of five members appointed by the President with the advice and consent of the Senate.

1935 – Federal Water Power Act amended and recodified to extend the FPC's authority to regulate the interstate aspects of electric power industry.

1940s – Hydropower accounted for roughly a third of US electricity production.

1940-45 – Reclamation power plants produced 47 TWh of electricity.

1977 – Department of Energy Organization Act created the Federal Energy Regulatory Commission and abolished FPC.

1986 –The Electricity Consumers Protection Act passed. Major changes to the hydroelectric power program included requiring the commission to give the same level of consideration to the environment, recreation, fish and wildlife as it gives to power and development objectives in making a licensing decision; and requiring the commission to base its recommendations for mitigating adverse effects of a licensing proposal to recommendations of Federal and State fish and wildlife agencies and to negotiate with the agencies if disputes occur.

1992 – National Energy Policy Act passed. It affected hydroelectric projects by prohibiting licensees from using the right of eminent domain in parks, recreational areas, or wildlife refuges; allowing applications for a license to fund environmental impact statements; and authorizing the Commission to assess licensees for costs incurred by fish and wildlife agencies, and other resource agencies.

2004 – Large hydroelectric plants supplied 16% of global electricity production, down from 19% in 1994. China installed nearly 8GW of large hydroelectric in 2004 to become the largest in terms of installed capacity.

2005 – EPACT revised the appeals process for licensing by the FERC. Appeals on license conditions by fishway rulings will now be heard in a trial-type hearing. Applicants may also propose alternatives to conditions provided by FERC to achieve the purpose of original license conditions. EPACT also expanded the PTC to include hydroelectric facilities.

Source: EIA, JPMorgan.

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Hydrokinetic energy

Tidal energy harnesses the ebb and flow of tides to produce electricity, while wave energy uses the high-amplitude waves to produce electricity. Both methods are formally referred to as hydrokinetic generation. The potential for hydrokinetic energy is believed to be extremely large. An estimate provided to the US Federal Energy Regulatory Commission in December 2006 was that tidal projects have the potential to meet 10% of total US electric demand.

Hydrokinetic technologies are currently in their research and pre-commercialization phase, with only a few small installations in commercial operation. One of these is in New York, where Verdant Power LLC, a start-up, is producing small amounts of power from tides in the East River. One of Verdant's two initial underwater turbines broke within two days of installation, and the other broke after 41 days. Verdant plans to submit an application to the US Federal Energy Regulatory Commission (FERC) for a 5-10 mW tidal field in September 2007.

To date, FERC has issued 43 permits to develop tidal projects on US coasts, and 15 additional permit applications are pending. Most of the applicants are either closely held companies or public agencies. The exceptions include Chevron, which earlier this month received a preliminary permit to build an 80 mW tidal project in Cook Inlet, Alaska, and Pacific Gas and Electric Co., which has applications pending for two projects in California. Some of the applicants are working in close collaboration with publicly traded utilities that will purchase the power.

Much larger projects are on the way. In May 2007, the British government announced a plan to encourage development of tidal power, and initiated a study of a £14 billion ($28 billion) dam across the Severn River estuary, which, it said, could produce as much electricity as five nuclear plants.

While the potential of tidal energy remains uncertain, the costs involved in developing these projects have continued to decline in the past 20 years[10]. Currently, wave and tidal projects' estimated production cost is between $0.08-0.20/kWh[11].

Key strengths:

No Emissions: Installations are powered entirely by currents and emit no pollutants or greenhouse gases.

Large Potential: The number of suitable sites is believed to be large, but potential production locations have not been fully mapped.

Baseload Potential: Because of regularity and predictability of tides, hydrokinetic generation could be used for baseload generation in place of coal, gas, or nuclear plants. The utility industry is extremely interested in the technology for this reason.

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10 Progress in Renewable Energy, by Robert Gross, Dr Matthew Leach, Dr Ausilio Bauen, ICCEPT.

11 Renewable energy Global Status Reports, Notes and References, World Watch Institute.

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Key weaknesses:

Infant technology: Commercialization may be years away.

Unknown environmental impacts: The effect of wave and tidal installations on the marine environment has not been studied thoroughly. Conflict with other uses of sea space is a potential problem.

Natural Limits: Generating capacity at any given location is limited by currents and tidal fall. Output will vary with lunar cycle and in some places with season.

Key Players & Recent Performance

At this time development of hydrokinetic generation is being pursued principally by small companies financed by venture capital. We have not been able to identify publicly traded companies that are highly leveraged to this sector.

Since Hydrokinetic is in research and pre-commercialization phase with no public companies, we have not ranked this energy source with other nine technologies we highlight in this report.

Alternative Energy Stocks

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Company Stats:

Technology Concentration	Solar
Financial Stats:	
Shares Outstanding	18,560
Share Price	$3.79
Market Cap.	$70
Debt	NA
Cash	NA
Enterprise Value	NA
Sales LTM	$13
2005A EPS	NA
2006A EPS	($0.16)
2007E EPS	NA
FCF	NA
Valuation	
EV/Sales	NA
EV/EBITDA	NA
P/EPS (2007E)	NA
Sentiment	
FC Rating (1= Buy, 5=Sell)	
# of Analysts Covering Co	
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	5/0

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Akeena Solar (AKNS/Not Covered/$3.79)

Company Description

Akeena Solar is a solar power system designer and integrator, currently serving customers in California, New York, New Jersey, Pennsylvania, and Connecticut. Based on data complied by the California Energy Commission and the New Jersey Clean Energy Program, Akeena is one of the largest national integrators of residential and small commercial solar power systems in the United States, with over 500 solar power installations. Since its founding in 2001, Akeena has concentrated on serving the solar power needs of this market. Maintaining this focus enables Akeena to concentrate its strategic efforts on what it considers the three factors most important for success in this rapidly growing industry: (1) developing proprietary solar power installation technology optimized for these market segments; (2) leveraging and enhancing the Akeena Solar brand name and reputation; and (3) Utilizing a process-driven approach to sell and install solar power systems efficiently in multiple locations.

Figure 41: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
Chairman, CEO, Co-Founder	Barry Cinnamon	~6 Yrs	MIT, Researcher
Executive VP, Co-Founder	Bill Scott	~6 Yrs	18 Years in Renewable Energy Industry
CFO	David Wallace	~1 Yr	CFO & Controller for various cos.

Source: Company reports and JPMorgan.

Recent News and Events

- May 31, 2007 — entered into definitive purchase agreements with investors to raise $12.6 million of gross proceeds in a private investment in public equity (PIPE) offering. Akeena will issue 4,572,725 shares of common stock in the offering, and three-year warrants to purchase an aggregate of up to 1,295,995 shares of common stock with an exercise price of $3.95 per share.
- May 14, 2007 — net sales for the 1Q07 were $6.3 million, an increase of 152 percent, compared to $2.5 million in net sales 1Q06. Net loss for the 1Q07 was $933,000, or $0.06 per share, compared to net income of $20,000, or less than a penny per share, in the first quarter of 2006. Installations for the quarter were approximately 830 kilowatts, compared to approximately 320 kilowatts for the same period last year.
- May 7, 2007 — acquired certain assets of Alternative Energy Inc. (AEI) of Santa Rosa. Akeena will assume AEI's backlog, and commence a marketing campaign to take advantage of the solar opportunities in Sonoma and Napa Counties.

Figure 42: Akeena Solar — Price Performance

Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Biofuels
Financial Stats:	
Shares Outstanding	18,385
Share Price	$2.10
Market Cap.	$39
Debt	$3
Cash	$4
Enterprise Value	$40
Sales LTM	$2
2005A EPS	($29.00)
2006A EPS	NA
2007E EPS	NA
FCF	($4)
Valuation	
EV/Sales	10.9x
EV/EBITDA	NM
P/EPS (2007E)	NA
Sentiment	
FC Rating (1= Buy, 5=Sell)	
# of Analysts Covering Co	
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	390/1

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Allegro Biodiesel (ABDS/Not Covered/$2.10)

Company Description

Allegro Biodiesel produces and sells biodiesel fuel. In addition, the company plans to develop biodiesel production facilities and distribution assets in the United States. The company owns an operating biodiesel fuel production facility located in Pollock, Louisiana, which uses renewable agricultural-based feedstock (primarily soybean oil) to produce biodiesel. This facility is situated on a 320-acre site, with access to transportation infrastructure, including a nearby navigable tributary river to the Mississippi and major highways and rail service.

Figure 43: Management Profile

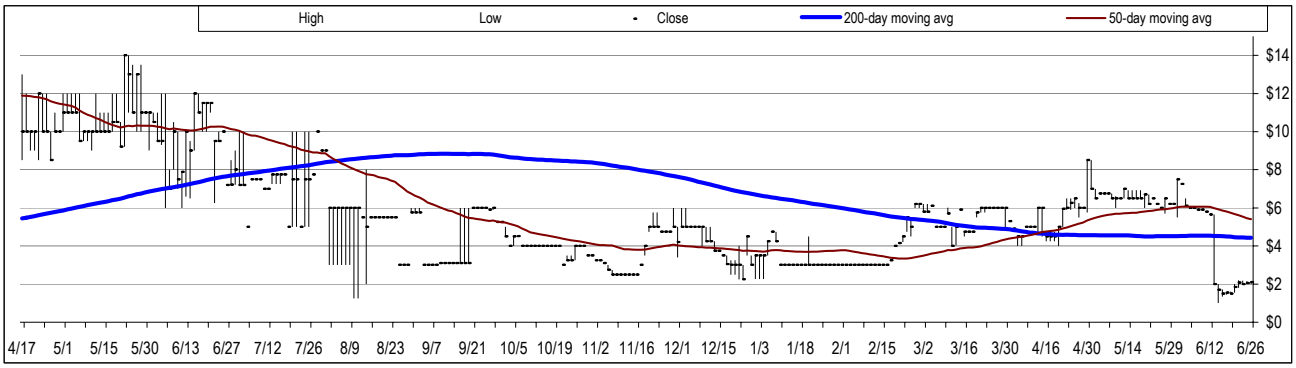
Title	Name	# of Yrs with Company	Previous Employer
CEO	Bruce Comer III	~4 Yrs	Private Equity Manager, Pacific Crossing (CFO)
COO	Darrell Dubroc	~4 Yrs	Cleco, Senior VP.
CFO	Heng Chuk	~4 Yrs	Ocean Park Advisors, Co-founder.

Source: Company reports and JPMorgan.

Recent News and Events

- June 13, 2007 — announced that the registration statement on Form SB-2 it filed in December 2006 with the Securities and Exchange Commission has been declared effective. The registration statement registers certain shares of common stock issuable upon the conversion of Allegro's Series A Convertible Preferred Stock, which was issued in September 2006 in connection with Allegro's acquisition of Vanguard Synfuels, LLC.
- September 20, 2006 — ABDS acquired 100% of the membership interests of Vanguard for an aggregate purchase price of $73,412,250.

Figure 44: Allegro Biodiesel — Price Performance



Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Biofuels
Financial Stats:	
Shares Outstanding	41,782
Share Price	$14.51
Market Cap.	$608
Debt	$300
Cash	$426
Enterprise Value	$405
Sales LTM	$1,592
2005A EPS	NA
2006A EPS	$1.64
2007E EPS	$0.98
FCF	$9
Valuation	
EV/Sales	0.2x
EV/EBITDA	3.4x
P/EPS (2007E)	14.8x
Sentiment	
FC Rating (1= Buy, 5=Sell)	2.9
# of Analysts Covering Co	14
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	43/14

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Aventine Renewable Energy (AVR/Overweight/$14.51)

Company Description

Aventine Renewable Energy produces and markets ethanol and related by-products. The company markets and distributes ethanol to energy companies in the US from its production facilities, marketing alliances with other ethanol producers and purchase and resale operations. In 2006, the company supplied almost 696 million gallons in the US.

In addition to ethanol, Aventine also produces and markets several by-products, including corn gluten feed and meal, corn germ, condensed corn distillers solubles, dried distillers grain with solubles, wet distillers grain with solubles, carbon dioxide and brewers' yeast. Aventine is also a marketer and distributor of biodiesel.

Figure 45: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
CEO	Ronald Miller	~26 Yrs	Texaco
CFO	Ajay Sabherwal	~2 Yrs	Choice One Communications, CFO
COO	Daniel Trunfio	~ 3 Mos	Royal Dutch/Shell, GM

Source: Company reports and JPMorgan.

Recent News and Events

- June 1, 2007 — finalized construction contracts for its planned capacity expansions at Mt. Vernon, Indiana, and Aurora, Nebraska. The facilities will each be producing 113 gallons of ethanol annually.
- May 1, 2007 — reported 1Q07 with net income of $14.9mm on revenues of $437mm (EPS of $0.35). Net income increased 22% over the same period.
- March 21, 2007 — priced $300mm in senior unsecured notes due 2017 with an interest rate of 10.0%.
- March 9, 2007 — appointed Daniel Trunfrio as the COO. Prior experience included working for Royal Dutch Shell as a General Manager and Vice President.
- January 19, 2007 — Pekin, Illinois, plant begun producing ethanol at 57mm gallons per year.

Figure 46: Aventine Renewable Energy — Price Performance

Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Hydropower
Financial Stats:	
Shares Outstanding	52,737
Share Price	$21.42
Market Cap.	$1,130
Debt	$1,104
Cash	$83
Enterprise Value	$2,098
Sales LTM	$1,506
2005A EPS	$0.92
2006A EPS	$1.47
2007E EPS	$1.26
FCF	NA
Valuation	
EV/Sales	1.4x
EV/EBITDA	7.8x
P/EPS (2007E)	17.0x
Sentiment	
FC Rating (1= Buy, 5=Sell)	3
# of Analysts Covering Co	4
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	28/9

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Avista Corp. (AVA/Neutral/$21.42)

Company Description

The company was founded in 1889 and is based in Spokane, Washington. The company has two main business segments; 1) Avista Utilities (95% of EBIT) is a regulated utility focused in the northwest US that generates, transmits, and distributes electricity and distributes natural gas; 2) Avista Advantage (5% of revenues) is a provider of facility information and cost management services for multi-site customers throughout the US.

Figure 47: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
Chairman, President and CEO	Gary G. Ely	40 Yrs	NA
CFO	Malyn K. Malquist	~4 Yrs	CEO, Sierra Pacific, 8 yrs

Source: Company reports and JPMorgan.

Recent News and Events

- April 26, 2007 — filed a request with the WUTC to increase rates by an average 15.85% for electric customers and 2.27% for natural gas customers in Washington.
- April 17, 2007 — signed a definitive agreement to sell substantially all of its contracts and ongoing operations to Coral Energy Holding, a subsidiary of Shell. All proceeds from the transactions are expected to be reinvested in Avista's utility business.
- February 7, 2007 — received approval from the WUTC to implement a natural gas decoupling mechanism which will allow the company to increase focus on energy efficiency programs.
- February 15, 2006 — shareholders voted on May 11th to approve a change to Avista's corporate structure resulting in the formation of a holding company.

Figure 48: Avista Corp — Price Performance

Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Fuelcells
Financial Stats:	
Shares Outstanding	114,591
Share Price	$4.97
Market Cap.	$570
Debt	$0
Cash	$175
Enterprise Value	$387
Sales LTM	$50
2005A EPS	($0.84)
2006A EPS	($0.58)
2007E EPS	($0.51)
FCF	($25)
Valuation	
EV/Sales	7.6x
EV/EBITDA	NM
P/EPS (2007E)	NM
Sentiment	
FC Rating (1= Buy, 5=Sell)	3.5
# of Analysts Covering Co	11
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	17/3

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Ballard Power Systems Inc (BLDP/Not Covered/$4.97)

Company Description

Ballard Power Systems Inc ("BLDP") was founded in 1979 and is located in Burnaby, Canada. BLDP designs, develops, and manufactures zero-emission proton exchange membrane (PEM) fuel cells. BLDP is also commercializing electric drives for fuel cell and other electric vehicles, power conversion products and is an automotive supplier of friction materials for power train components. BLDP has strategic alliances with DaimlerChrysler and Ford Motor Company. Currently, the company's technology is in various demonstrations worldwide and is looking to provide solutions for the transportation industry, cogeneration system to provide heat, hot water and electricity for homes.

Figure 49: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
CEO, President	John Sheridan	~6 Yrs	Bell Canada, COO ('80 - '01), BLDP Board Mem. since 01
COO	Lee Craft	~5 Yrs	Motorola Computer Group, Director of Manufacutring Ops.
CFO	David Smith	~6 Yrs	Placer Dome, Corporate Relations & Business Dev. ('84 - '99)
CTO	Christopher Guzy	~2 Yrs	GE Healthcare Hungary, General Manager ('01 - '05)
Research & Development	Charles Stone	~17 Yrs	NA

Source: Company reports and JPMorgan.

Recent News and Events

- May 07, 2007 — signed an initial two-year agreement with Plug Power to supply fuel cell stacks for materials handling applications.
- March 19, 2007 — awarded a R&D contract from the US Department of Defense (DoD) for a materials handling equipment application cost reduction and demonstration program. The contract is value at up to $5.88 million.
- December 20, 2006 — signed an agreement to sell its electric drive operations to Siemens VDO Automotive Corp.
- October 10, 2006 — signed an agreement valued at approximately $22 million with General Hydrogen Corporation to supply 2,900 Mark 9 SSL fuel cells.

Figure 50: Ballard Power Systems— Price Performance

Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Biofuels
Financial Stats:	
Shares Outstanding	30,850
Share Price	$2.16
Market Cap.	$67
Debt	$0
Cash	$0
Enterprise Value	$68
Sales LTM	$0
2005A EPS	NA
2006A EPS	NA
2007E EPS	NA
FCF	NA
Valuation	
EV/Sales	NM
EV/EBITDA	NM
P/EPS (2007E)	NA
Sentiment	
FC Rating (1= Buy, 5=Sell)	
# of Analysts Covering Co	
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	16/1

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Better Biodiesal (BBDS/Not Covered/$2.16)

Company Description

Better Biodiesel, founded in 2004, believes it has developed a proprietary waterless technology that significantly reduces the costs of biodiesel production and environmental impact. A key environmental distinction in Better Biodiesel's production method is the absence of any caustic chemicals in the catalytic reaction process, which eliminates the washing and evaporation steps necessary under customary biodiesel production processes. This proprietary technology speeds up the production timeline, increases the volume of fuel that can be made within a given time period, and reduces the amount of land needed for the production plant. Better Biodiesel's initial pilot plant is producing approximately three million gallons per year and has a total footprint of less than 160 square feet. By contrast, much more acres are required for a conventional biodiesel facility of the same production capacity.

Figure 51: Management Profile

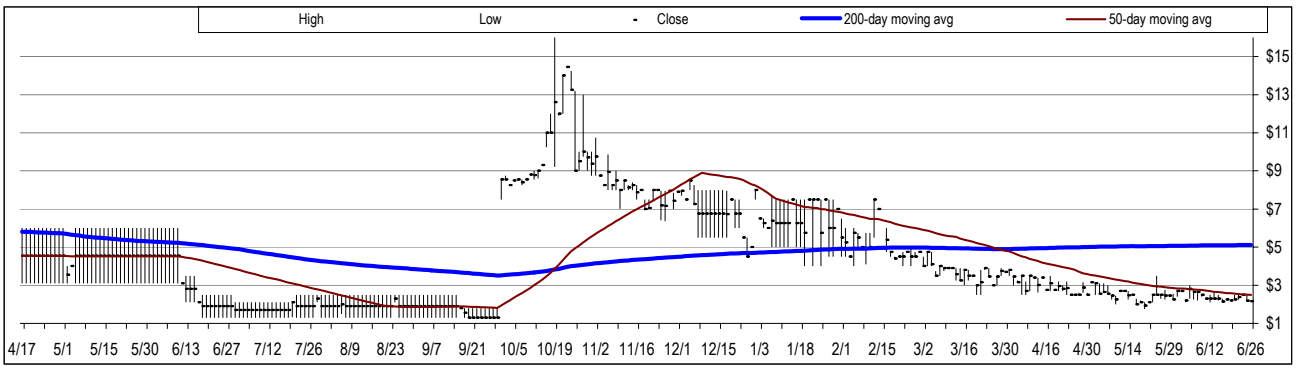
Title	Name	# of Yrs with Company	Previous Employer
CEO	Ron Crafts	NA	Culinary Crafts, Founder.
CFO	Gary Cook	NA	Independent Consultant
COO	Lynn Dean Crawford	NA	NA

Source: Company reports and JPMorgan.

Recent News and Events

- May 9, 2007 — completed a $690,000 equity financing with strategic investors. BBDS intends to use proceeds primarily to build out its Spanish Fork biodiesel production facility. Assuming completion and execution of a definitive agreement, Cardwell will have the right to purchase a minimum of 500,000 gallons of Better Biodiesel's biodiesel per year for three years, with expansion opportunity of up to 15 million gallons per year.
- January 18, 2007 — made its first commercial shipment of ASTM-D6751-standard biodiesel fuel to heavy hauling trucker Christensen Brothers of Spanish Fork, Utah.

Figure 52: Better Biodiesal — Price Performance



Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Microturbines
Financial Stats:	
Shares Outstanding	104,752
Share Price	$1.13
Market Cap.	$118
Debt	$0
Cash	$25
Enterprise Value	$81
Sales LTM	$23
2005A EPS	($0.49)
2006A EPS	($0.37)
2007E EPS	($0.23)
FCF	($32)
Valuation	
EV/Sales	3.6x
EV/EBITDA	NM
P/EPS (2007E)	NM
Sentiment	
FC Rating (1= Buy, 5=Sell)	4
# of Analysts Covering Co	1
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	6/1

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Capstone Turbine Corp. (CPST/Not Covered/$1.13)

Company Description

Capstone Turbine Corp. is involved in production, marketing, and servicing of microturbine technology solutions. The company was the first to offer a commercial microturbine product in 1999. Microturbines can be used for stationary applications such as: cogeneration, combined heat and power (CHP), resource recovery, power reliability, and remote power. The company's microturbines can operate on a full range of renewable and fossil-fuel energies and can be connected to a grid. Since inception, the company has shipped more than 3,200 Capstone MicroTurbine systems to customers worldwide, with the US accounting for approximately 50% of the company's net revenues. The company has 86 US and 26 international patents.

Figure 53: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
CEO and President	Darren Jamison	~0 Yrs	Northern Power Systems (COO and President)
Exective VP and CFO	Walter "Chuck" McBride	~2 Yrs	First Consulting Group (Exec. VP & CFO)
Chairman	Eliot Protsch	N/A	Interstate Power and Light Co. (President)

Source: Company reports and JPMorgan.

Recent News and Events

- June 7, 2007 — signed of a new OEM agreement with Stellar Energy Systems and strategic partner MAS Global.
- December 6, 2006 — named Darren Jaminson as its new President and CEO. Prior to joining Capstone, Mr. Jamison had been President and COO of Northern Power Systems.
- February 24, 2006 — co-developed a 250 KW Hybrid energy system with Fuelcell Energy that uses Capstone turbine.
- January 31, 2006 — signed an agreement with Broad USA to jointly develop fully integrated cogeneration systems.

Figure 54: Capstone Turbine Corp — Price Performance

Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Biomass
Financial Stats:	
Shares Outstanding	153,795
Share Price	$24.72
Market Cap.	$3,802
Debt	$2,412
Cash	$306
Enterprise Value	$5,749
Sales LTM	$1,269
2005A EPS	$0.46
2006A EPS	$0.72
2007E EPS	$0.83
FCF	$275
Valuation	
EV/Sales	4.4x
EV/EBITDA	11.0x
P/EPS (2007E)	29.9x
Sentiment	
FC Rating (1= Buy, 5=Sell)	2.1
# of Analysts Covering Co	7
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	26/0

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Covanta Holding Corp (CVA/Neutral/$24.72)

Company Description

Covanta Holding Corp was founded in 1960 and is located in Fairfield, New Jersey. CVA is a holding company with separate subsidiaries that engage in waste disposal, energy services and specialty insurance. Covanta Energy's waste-to-energy facilities convert municipal solid waste into renewable energy with 51 power generation facilities (39 based in the US and 12 internationally). Covanta's power generation facilities use various fuels, including municipal solid waste, hydroelectric, natural gas, coal, wood waste, landfill gas, and heavy fuel oil. It sells electricity to utilities and other electricity purchasers. The company also operates wastewater treatment and potable water production facilities. Covanta Holding also provides specialty insurance products and services.

Figure 55: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
CEO, President	Anthony Orlando	~20 Yrs	N/A
CFO	Mark Pytosh	~0 Yrs	Executive VP and CFO of Waste Services
Secretary, General Counsel	Timothy Simpson	~15 Yrs	N/A

Source: Company reports and JPMorgan.

Recent News and Events

- May 29, 2007 — agreed to purchase two biomass energy facilities and a biomass energy fuel management business from The AES Corporation. These facilities added 75 megawatts to the company's portfolio of renewable energy plants.
- November 16, 2006 — stockholders approved an amendment of the company's certificate of incorporation to delete provisions which placed restrictions on the acquisition and transfer of common stock by owners of 5% or more of the outstanding common stock and approval by stockholders of the terms of any preferred stock issued by the company to affiliates and to holders of 1% or more of the common stock.
- February 8, 2006 — executed contracts with Lee County, Florida, to manage the construction of a 636 ton per day capacity expansion to Lee County's 1,200 TPD waste-to-energy facility located in Fort Myers, and to extend Covanta's current service agreement to operate and maintain the expanded facility.

Figure 56: Covanta Holding Corp — Price Performance

Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Solar
Financial Stats:	
Shares Outstanding	14,860
Share Price	$6.60
Market Cap.	$99
Debt	$0
Cash	$4
Enterprise Value	$96
Sales LTM	$0
2005A EPS	($1.35)
2006A EPS	NA
2007E EPS	NA
FCF	($23)
Valuation	
EV/Sales	623.2x
EV/EBITDA	NM
P/EPS (2007E)	NA
Sentiment	
FC Rating (1= Buy, 5=Sell)	3
# of Analysts Covering Co	2
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	18/1

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Daystar Technologies (DSTI/Not Covered/$6.60)

Company Description

Founded in 1997, Daystar Technologies Inc. designs, manufactures, and markets PV products. The company is currently developing a high volume manufacturing process for its thin-film solar cells that it expects will create inexpensive, light weight and more efficient PV products.

In 2005, the company's revenues were generated solely from contracts with the New York State government agency for the development of equipment and demonstrating manufacturing capability.

Figure 57: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
CEO	Stephen DeLuca	~1 Yrs	INFICON Holding
CFO	Raja Venkatesh	~0 Yrs	Myricom

Source: Company reports and JPMorgan.

Recent News and Events

- May 11, 2007 — Raja Venkatesh was appointed CFO, replacing Stephen Aanderud who resigned on July 24, 2006.
- February 2, 2007 — Randall Graves, Jr. was elected to replace Dr. John Tuttle as Chairman of the Board.
- November 24, 2006 — Dr. Stephan DeLuca was appointed the company's new CEO, replacing Dr. John Tuttle.
- July 11, 2005 — signed a purchase agreement with Micro Energy Group, Inc., for DayStar's TerraFoil-SP solar cells. The purchase agreement calls for up to 500-kilowatts of TerraFoil-SP™ cells with monthly delivery beginning later in 2005 and escalating in volume through the end of 2006. Prices are based on a variable market-competitive pricing mechanism, and deliveries are contingent upon DayStar's ramp-up of its production capacity.

Figure 58: Daystar Technologies' — Price Performance

Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Fuelcells
Financial Stats:	
Shares Outstanding	39,757
Share Price	$1.13
Market Cap.	$45
Debt	$10
Cash	$10
Enterprise Value	$37
Sales LTM	$45
2005A EPS	($0.45)
2006A EPS	($1.38)
2007E EPS	($0.64)
FCF	($24)
Valuation	
EV/Sales	0.8x
EV/EBITDA	NM
P/EPS (2007E)	NM
Sentiment	
FC Rating (1= Buy, 5=Sell)	1
# of Analysts Covering Co	1
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	11/1

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Distributed Energy Systems Corp. (DESC/Not Covered/$1.13)

Company Description

In 2003, Proton Energy Systems (founded 1996) acquired Northern Power (founded 1974) to form Distributed Energy Systems Corp. The company operates the merged entities as two separate subsidiaries, Proton Energy Systems and Northern Power. Proton Energy Systems is involved in manufacturing proton exchange membrane (PEM), industrial hydrogen generators (electrolyzers), and fuel cell-related products. Northern Power provides integrated and on-site power solutions that leverage the full range of renewable and fossil-fuel technologies.

The company's business platforms include: Hydrogen generators and fuel cell products, turnkey solutions in renewable energy, including solar, wind, biogas, hydrogen, and energy R&D services.

Figure 59: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
CEO	Ambrose Schwallie	~1 year	Washington Group International (President of Defense Unit)
CFO	Peter J. Tallian	~0 year	Transwitch, Metavante (CFO)
Chairman	Bernad Cherry	~0 year	Foster Wheeler Ltd. (CEO of Power Group)

Source: Company reports and JPMorgan.

Recent News and Events

- March 14, 2006 — awarded a contract by Pathmark Stores, Inc., to provide three turnkey photovoltaic (PV) systems (250KW systems each for the three stores).
- January 17, 2006 — appointed Ambrose L. Schwallie as chief executive officer and a director of the company.
- August 25, 2005 — selected to provide two integrated power systems for the Sakhalin-II Pipeline project in the Russian Far East. This brings Northern Power's total contractual involvement in Sakhalin oil and gas development projects to more than $6mm.

Figure 60: Distributed Energy Systems — Price Performance

Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Solar
Financial Stats:	
Shares Outstanding	50,927
Share Price	$5.37
Market Cap.	$273
Debt	$96
Cash	$88
Enterprise Value	$249
Sales LTM	$144
2005A EPS	($0.47)
2006A EPS	($0.46)
2007E EPS	($0.31)
FCF	($10)
Valuation	
EV/Sales	1.6x
EV/EBITDA	NM
P/EPS (2007E)	NM
Sentiment	
FC Rating (1= Buy, 5=Sell)	2.3
# of Analysts Covering Co	7
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	13/1

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Emcore Corp. (EMKR/Not Covered/$5.37)

Company Description

Founded in 1984, Emcore Corp. offers a broad portfolio of compound semiconductor-based components and subsystems for the broadband, fiber optic, satellite, solar and wireless communications markets. Emcore has three operating segments: Fiber Optics, Photovoltaics, and Electronic Materials and Devices.

Emcore's products in the solar cell market have so far been largely aimed at servicing the global satellite communications market. Emcore is adapting its solar cell product for terrestrial applications. The company thinks that these systems will be competitive with silicon technologies because they benefit more from concentration than silicon.

Figure 61: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
CEO, President	Reuben Richards	~11 yrs	Jesup & Lamont (Sr. MD, 1994-96
COO, President	Hong Q. Hou	~9 yrs	Sandia National Laboratories, AT&T Bell Laboratories
CFO	Adam Gushard	~10 yrs	Coopers & Lybrand LLP

Source: Company reports and JPMorgan.

Recent News and Events

- May 16, 2007 — PhotovVoltaics Division attained a record solar conversion efficiency of 31% for an entirely new class of advanced multi-junction solar cells optimized for space applications.
- April 27, 2007 — PhotoVoltaics Division was awarded a $2m contract by NASA for solar panels for the Mars Cruise Stage spacecraft.
- November 30, 2006 — invested $18 million in WorldWater (WWAT.OB), a developer and marketer of photovoltaic systems for terrestrial power generation including proprietary electrical motor drive technology for water pumping.
- November 28, 2006 — PhotoVoltaics Division was been awarded a multi-year purchase order from a leading manufacturer of high power geosynchronous comm satellites. The company estimates the value of the purchase is $41 million over a period of 3 years.
- July 20, 2006 — agreed to sell the company's Electronic Materials & Device division (EMD) to IQE for a total value of $16 million.

Figure 62: Emcore Corp. — Price Performance

Source: Factset and JPMorgan.

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Company Stats:

Technology Concentration	lybrid Electric Veh.
Financial Stats:	
Shares Outstanding	417,004
Share Price	$0.23
Market Cap.	$101
Debt	$18
Cash	$0
Enterprise Value	$155
Sales LTM	$0
2005A EPS	NA
2006A EPS	NA
2007E EPS	($0.08)
FCF	($24)
Valuation	
EV/Sales	NM
EV/EBITDA	NM
P/EPS (2007E)	NM
Sentiment	
FC Rating (1= Buy, 5=Sell)	1
# of Analysts Covering Co	1
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	2/0

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Ener1 Inc. (ENEI/Not Covered/$0.23)

Company Description

Ener1 was founded in 1985 as Boca Research, Inc., changed its name to Ener1, Inc., in 2002, and is headquartered in West Palm Beach, Florida. Ener1 Group, a privately held technology incubator company, acquired an 80% stake in the company in early 2002 and currently owns 90% of Ener1 Inc.'s common stock.

Since 2003, ENEI has transformed itself form a hardware/software oriented company to an alternative energy technology company. ENEI operates its business through 3 separate subsidiaries which the company plans to spin-off to its shareholders. EnerDel (an 80.5% owned JV with Delphi Corporation) is focused on the development and marketing of Li-ion batteries for US manufacturers of hybrid electric vehicles; EnerFuel develops fuel cell products and services for the portable power, auxiliary power, distributed power, and backup power markets; NanoEner develops technologies, materials, and equipment for nanostructured materials processing.

Figure 63: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
CEO, President	Victor Mendes	~0 yrs	CHEP International (CEO), Recall (CEO)
CFO	Ajit Habbu	~0 yrs	Recall (CFO)

Source: Company reports and JPMorgan.

Recent News and Events

- May 22, 2007 — awarded a research grant from the Office of Naval Research (ONR) in the amount of $853,000 to develop a lithium ion battery system for use in asset tracking applications.
- April, 2007 —received orders to deliver lithium ion (Li ion) battery samples based on its proprietary technology to a leading European OEM automotive company and to a leading tier one automotive supplier.
- September 12, 2006 — installed its first mass production line for lithium ion (Li-ion) battery electrodes at the company's Indiana facility.
- June 7, 2006 — received a contract from the U.S. Advanced Battery Consortium (USABC). The 12-month, cost-share contract is the first step of ENEI proposed three phase plan to launch a cost competitive lithium ion (Li-Ion) battery that is lighter, smaller and higher in power than existing battery technologies for hybrid electric vehicles.

Figure 64: Ener1 Inc — Price Performance

Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Solar
Financial Stats:	
Shares Outstanding	39,536
Share Price	$30.05
Market Cap.	$1,188
Debt	$26
Cash	$272
Enterprise Value	$921
Sales LTM	$102
2005A EPS	$0.65
2006A EPS	($0.48)
2007E EPS	$0.07
FCF	($170)
Valuation	
EV/Sales	8.7x
EV/EBITDA	NM
P/EPS (2007E)	449.9x
Sentiment	
FC Rating (1= Buy, 5=Sell)	2.1
# of Analysts Covering Co	12
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	58/7

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Energy Conversion Devices (ENER/Not Covered/$30.05)

Company Description

Energy Conversion Devices was founded in 1960 and is located in Rochester Hills, Michigan. ENER designs, develops, and commercializes products for the alternative energy and information technology industries. ENER's portfolio of alternative energy solutions includes: hydride storage materials capable of storing hydrogen in the solid state for use as a feedstock; fuel cell technology, thin-film amorphous solar cells, modules, panels and systems for generating solar electric power; and Ovonic NiMH batteries. The company's advanced information technologies include phase-change electrical and optical memory, and the threshold switch. Additionally, ENER designs and builds manufacturing machinery that incorporates its proprietary production processes.

Figure 65: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
Chairman, CEO	Robert C. Stempel	~11 Yrs	General Motors, Chairman & CEO (1990 - 1992)
Chief Scientist & Technologist	Stanford Ovshinsky	~46 Yrs, Founder	N/A
COO	James Metzger	~4 Yrs	Texeco, Chief Technology Officer

Source: Company reports and JPMorgan.

Recent News and Events

- April 26, 2007 — granted a royalty-bearing, nonexclusive right to G4 to sell NiMH batteries using the company's technology.
- March 13, 2007 — chosen to provide their NiMH battery system for GM's redesigned 2008 Chevrolet Malibu Hybrid Sedan.
- January 4, 2007 — awarded a contract to develop and test lithium-ion battery system technology for the GM plug-in hybrid electric vehicle (PHEV) program. Cobasys is a JV between Chevron Technology Ventures and ENER.
- July 6, 2006 — signed a multi-year cooperative agreement with Spazio Energia and Sunerg Solar of Italy to supply a total of 46 MW of PV laminates.

Figure 66: Energy Conversion Devices— Price Performance

Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	lybrid Electric Veh.
Financial Stats:	
Shares Outstanding	14,828
Share Price	$6.60
Market Cap.	$98
Debt	$1
Cash	$9
Enterprise Value	$93
Sales LTM	$2
2005A EPS	NA
2006A EPS	($0.33)
2007E EPS	NA
FCF	($6)
Valuation	
EV/Sales	32.0x
EV/EBITDA	NM
P/EPS (2007E)	NA
Sentiment	
FC Rating (1= Buy, 5=Sell)	
# of Analysts Covering Co	
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	9/2

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Enova Systems (ENOV/Not Covered/$6.60)

Company Description

Enova was founded in 1976 and is based in Torrance, California. Enova develops, designs, and produces drive systems and related components for electric, hybrid-electric, fuel cell- and microturbine-powered vehicles; as well as power management and power conversion components for stationary distributed power generation systems that employ hydrogen fuel cells, microturbines, and advanced batteries.

Enova's primary focus markets encompass both series and parallel heavy-duty drive systems for multiple vehicle and marine applications. The company sells its products to customers worldwide. Many of Enova's products are currently being utilized in cars, trucks, buses, train locomotives and other vehicles in Asia, Europe, and the US.

Figure 67: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
CEO, President	Edwin O. Riddell	~3 yrs	N/A
Executive VP	Mike Staran	~2 yrs	Effective Solutions People LLC
CFO	Jarrett Fenton	N/A	The Clarity Group

Source: Company reports and JPMorgan.

Recent News and Events

- June 20, 2007 — received and began delivering a production order for 200 systems from Smith Electric Vehicles, a division of The Tanfield Group Plc (TAN).
- May 9, 2007 — announced that it will supply a Power Control Unit (PCU) to the Th!nk Group for use in their production electric vehicle.
- March 7, 2007 — designed, integrated and delivered 13 GMC 2500 service vans with unique Post-Transmission Parallel Hybrid Drive System to Verizon. Verizon owns the 2nd largest vehicle fleet in North America, estimated at 58,000 vehicles.
- December 13, 2006 — partnered with Tokyo R&D to supply an electric bus to the Hokuriku Electric Power Company in Japan. .

Figure 68: Enova Systems — Price Performance

Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Biomass
Financial Stats:	
Shares Outstanding	9,787
Share Price	$8.85
Market Cap.	$87
Debt	$69
Cash	$63
Enterprise Value	$98
Sales LTM	$54
2005A EPS	($1.55)
2006A EPS	($1.28)
2007E EPS	($1.02)
FCF	($28)
Valuation	
EV/Sales	1.8x
EV/EBITDA	NM
P/EPS (2007E)	NM
Sentiment	
FC Rating (1= Buy, 5=Sell)	1.5
# of Analysts Covering Co	4
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	11/1

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Environmental Power Corp (EPG/Not Covered/$8.85)

Company Description

Environmental Power Corp. was founded in 1982 and is located in Portsmouth, New Hampshire. EPG has two operating subsidiaries that produce renewable energies. The Microgy division develops biogas facilities which can cost-effectively and reliably produce clean, renewable gas from agriculture and food industry wastes. The Buzzard Power division currently owns a leasehold interest in an 83 megawatt generating facility which produces green power from coal mining waste.

Figure 69: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
Chairman	Joseph Cresci	~15 Yrs, Founder	CEO of a Distribution Company
Vice Chairman	Kamlesh Tejwani	~4 Yrs	Target Capital Corporation (PE Firm) ('96 - 03)
CEO and President	Richard Kessel	1 Yr	Suez Environment, CEO

Source: Company reports and JPMorgan.

Recent News and Events

- May 31, 2007 — intends to terminate the leasehold interest in the 83mw waste coal-fired Scrubgrass Generating Facility
- May 29, 2007 — executed two project option agreements to build, own, and operate Renewable Natural Gas (RNG) production facilities in Colorado and Idaho.
- November 20, 2006 — announced a definitive lease and manure handling agreements with several California dairies for the development of renewable gas facilities. At full operation these facilities are expected to generate 8000 mcf/day of renewable gas (RNG), an amount sufficient to fulfill Microgy's salable gas right under the recently announced long term purchase contract with Pacific Gas & Electric (PG&E).

Figure 70: Environmental Power Corp— Price Performance

Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Biofuels
Financial Stats:	
Shares Outstanding	28,610
Share Price	$0.62
Market Cap.	$40
Debt	$0
Cash	$13
Enterprise Value	$29
Sales LTM	$0
2005A EPS	NA
2006A EPS	NA
2007E EPS	NA
FCF	NA
Valuation	
EV/Sales	NM
EV/EBITDA	NM
P/EPS (2007E)	NA
Sentiment	
FC Rating (1= Buy, 5=Sell)	
# of Analysts Covering Co	
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	5/0

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Ethanex Energy (EHNX/Not Covered/$0.62)

Company Description

Ethanex Energy is a development stage company that plans to engage in the business of producing fuel ethanol through the ownership and operation of ethanol plants. The company's objective is to be a low-cost producer in the ethanol industry. EHNX intends to market the ethanol it produces to refineries for use as a blend component in the U.S. gasoline fuel market. In addition, EHNX intends to produce and sell dried distiller grains, which will be used in the manufacture of various animal feeds.

Figure 71: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
CEO	Albert Knapp III	~1 Yr	TIC, Buseinss Development
CFO	David McKittrick	8 Mos	Founder of a Consulting Company
COO, Co-founder.	Bryan Sherbacow	~1 Yr	The Armistead Group, Asset Manager
COO, Co-founder.	Randy Rahm	~1 Yr	Westar Energy, Director

Source: Company reports and JPMorgan.

Recent News and Events

- June 13, 2007 — appointed Matthew H. Craig as Manager of Sales and Marketing and Wendy A. Dickey as Director of Corporate Finance.
- May 3, 2007 — entered into a Joint Marketing Agreement with Buhler to collaborate on and jointly market a bio-refinery ethanol production system. The integrated technology and services platform will enable both existing and new ethanol plants to increase production volume and operating margins.
- April 16, 2007 — granted an air permit for the construction of its Ethanex Energy Southern Illinois facility to be located in Waltonville, Illinois. This facility is a 132 million gallon per year fuel-grade ethanol plant which will include patented fractionation technology that reduces energy consumption by more than 20%, increases the value of co-products and increases the throughput capacity by 20%. This next generation technology contributes to a 25% lower production cost per gallon than standard ethanol facilities.

Figure 72: Ethanex Energy — Price Performance

Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Solar
Financial Stats:	
Shares Outstanding	69,553
Share Price	$8.64
Market Cap.	$601
Debt	$90
Cash	$55
Enterprise Value	$639
Sales LTM	$103
2005A EPS	($0.29)
2006A EPS	($0.41)
2007E EPS	($0.28)
FCF	($96)
Valuation	
EV/Sales	6.1x
EV/EBITDA	NM
P/EPS (2007E)	NM
Sentiment	
FC Rating (1= Buy, 5=Sell)	2.6
# of Analysts Covering Co	19
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	18/0

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Evergreen Solar Inc. (ESLR/Not Covered/$8.64)

Company Description

Founded in 1994, Evergreen Solar engages in development, manufacturing, and marketing of proprietary String Ribbon solar power products. ESLR has a production and manufacturing capacity of 15MW/year. The company has ownership interests in EnerQ (64% ownership), Q Cells (21% ownership), and Renewable Energy Corporation (15% ownership). The Ener-Q facility is based in Germany and has an initial production capacity of 30MW/year, and over the long term this facility can be expanded to manufacture up to 120/MW/year. The company's primary markets for its products are in the US and Germany.

Figure 73: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
CEO, President	Richard M. Feldt	~3	Perseid, CEO
CFO	Michael El-Hillow	~3 Yrs	Advanced Energy, CFO
Vice President, Worldwide Expansion	Richard Chleboski	~13 Yrs	Mobil Solar Energy Corp, Strategic Planner

Source: Company reports and JPMorgan.

Recent News and Events

- June 21, 2007 — opened a second factory in Thalheim, Saxony-Anhalt, Germany that can generate 60-MW.
- April 17, 2007 —The Board of Directors approved the construction of a new $150 million facility that will increase Evergreen Solar's production capacity in Massachusetts by 70 MW and double its employee base in the state to more than 600 employees.
- April 3, 2007 — signed a major extension of its sales agreement with SunEdision. The company will ship an additional $316 million of PV modules to SunEdison through 2011.
- January 3, 2006 — appointed Michael El-Hillow as CFO. El-Hillow succeeds Donald Muir, who resigned from the company to pursue other opportunities.

Figure 74: Evergreen Solar Inc. — Price Performance

Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Solar
Financial Stats:	
Shares Outstanding	72,364
Share Price	$88.27
Market Cap.	$6,388
Debt	$96
Cash	$325
Enterprise Value	$6,231
Sales LTM	$135
2005A EPS	NA
2006A EPS	$0.07
2007E EPS	$0.53
FCF	NA
Valuation	
EV/Sales	33.1x
EV/EBITDA	305.5x
P/EPS (2007E)	168.0x
Sentiment	
FC Rating (1= Buy, 5=Sell)	2.2
# of Analysts Covering Co	9
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	88/24

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

First Solar (FSLR/Not Covered/$88.27)

Company Description

First Solar designs and manufactures solar modules using a proprietary thin film semiconductor technology. The company's objective is to reduce the cost of solar electricity to levels that compete on a non-subsidized basis with the price of retail electricity in key markets throughout the world. FSLR's FS Series PV modules are designed for use in large scale, grid-connected solar power plants and are sold to leading solar project developers for use in commercial PV projects.

Figure 75: Management Profile

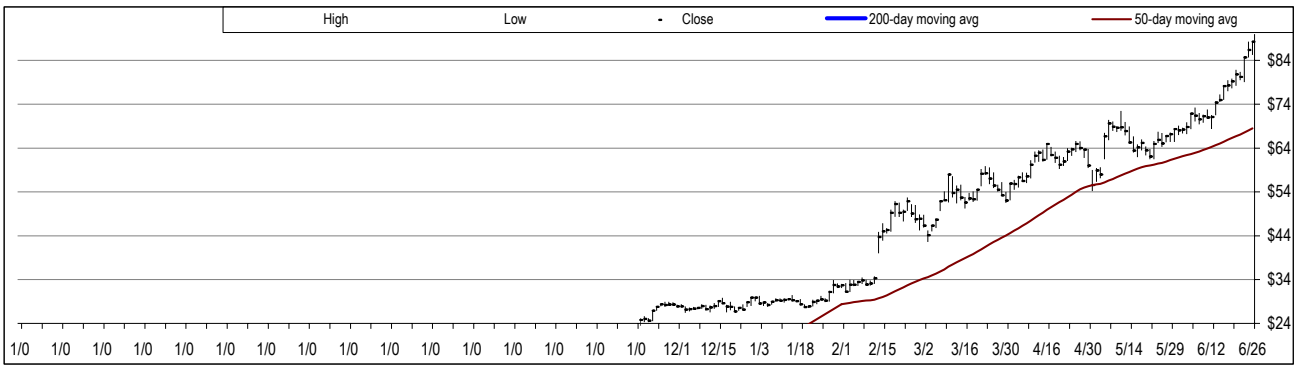
Title	Name	# of Yrs with Company	Previous Employer
CEO	Michael Ahearn	~7 Yrs	Equity Investment Firm, President.
CFO	Jens Meyerhoff	~1 Yr	Virage Logic, CFO
President	Bruce Sohn	4 Mos	Intel, Devloping Semi. Technology

Source: Company reports and JPMorgan.

Recent News and Events

- May 3, 2007 — Quarterly revenues for 1Q07 were $66.9 million, up from $52.7 million in the fourth quarter of fiscal 2006 and up from $13.6 million in the first quarter of fiscal 2006.
- April 20, 2007 — announced that the company had a ground breaking ceremony on a new four-line solar module manufacturing plant in Kedah, Malaysia, with an expected minimum annual nameplate capacity of 100MW.
- January 9, 2007 — amended four of its existing long-term supply contracts to increase the total volume of modules to be sold between 2009 and 2012 by an aggregate of 264MW.
- November 22, 2006 — closed its previously announced initial public offering of 22,942,500 shares, including 2,942,500 shares sold pursuant to the underwriters' exercise of the over-allotment option granted by FSLR. The shares are listed on the Nasdaq Global Market under the symbol "FSLR" and were sold at an initial public offering price of $20 per share.

Figure 76: First Solar Inc. — Price Performance



Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Fuelcells
Financial Stats:	
Shares Outstanding	55,618
Share Price	$7.66
Market Cap.	$520
Debt	$1
Cash	$179
Enterprise Value	$394
Sales LTM	$33
2005A EPS	($1.56)
2006A EPS	($1.61)
2007E EPS	($1.36)
FCF	($74)
Valuation	
EV/Sales	10.9x
EV/EBITDA	NM
P/EPS (2007E)	NM
Sentiment	
FC Rating (1= Buy, 5=Sell)	2
# of Analysts Covering Co	8
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	20/5

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

FuelCell Energy Inc (FCEL/Not Covered/$7.66)

Company Description

FuelCell Energy was founded in 1969 and is headquartered in Danbury, Connecticut. FCEL designs and manufactures high temperature hydrogen fuel cells for electric power generation. FCEL believes that their power plants can generate electricity with up to twice the efficiency of conventional fossil fuel plants and with virtually no air pollution. The stationary power generators range from 250 kilowatts to 2 megawatts production capacity for various commercial and industrial customers in the following markets: hospitals, universities, hotels, utilities, wastewater treatment facilities, etc.

Figure 77: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
CEO, President	R. Daniel Brdar	~7Yrs	Left General Electric to join FCEL in 2000
Gov. Research & Operations	Christopher Bentley	~17Yrs	Turbine Airfoils, President (1985 - 1989)
CFO	Joseph Mahler	~8 Yrs	Earthgro, CFO (1993 - 1998)

Source: Company reports and JPMorgan.

Recent News and Events

- June 4, 2007 — announced that its distribution partner POSCO Power has sold 5.1 megawatts (MW) of new power plants that allow electric utility customers in South Korea to generate clean energy and comply with the country's strict greenhouse gas reduction targets.
- April 24, 2007 — completed performance and endurance tests on a prototype 3 to 10 kW fuel cell commissioned by the US DOE.
- March 27, 2007 — Connecticut Clean Energy Fund (CCEF) screened and selected six energy projects, incorporating 68 MW of the company's fuel cell products.
- February 20, 2007 — expanded its agreement with POSCO. Under the 10-year license and distribution agreement POSCO Power will become a provider of FuelCell Energy Direct FuelCell power plants in Korea.
- January 7, 2007 — announced a formation of a marketing and distribution agreement with The Linde Group, a EUR 12 billion worldwide market leader in industrial gases and engineering.

Figure 78: Fuel Cell Energy— Price Performance

Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Biofuels
Financial Stats:	
Shares Outstanding	6,003
Share Price	$17.85
Market Cap.	$107
Debt	$11
Cash	$32
Enterprise Value	$92
Sales LTM	$0
2005A EPS	NA
2006A EPS	$0.22
2007E EPS	$0.73
FCF	($56)
Valuation	
EV/Sales	NM
EV/EBITDA	36.3x
P/EPS (2007E)	24.6x
Sentiment	
FC Rating (1= Buy, 5=Sell)	1.3
# of Analysts Covering Co	3
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	64/17

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Green Plains Renewable Energy (GPRE/Not Covered/$17.85)

Company Description

Green Plains Renewable Energy was formed in 2004 and incorporated in Iowa. GPRE is constructing a 50 million gallon dry mill, fuel grade ethanol plant located near Shenandoah, Iowa. This plant will incorporate the latest process control systems and biotechnology to maximize production yields.

The Company's second plant is being built near Superior, Iowa. This is also a name-plate 50 million gallon plant. The Superior plant is anticipated to commence operations sometime near the end of 2007. The company also intends to expand the production capacity of these plants in the future and to build other plants at other sites.

Figure 79: Management Profile

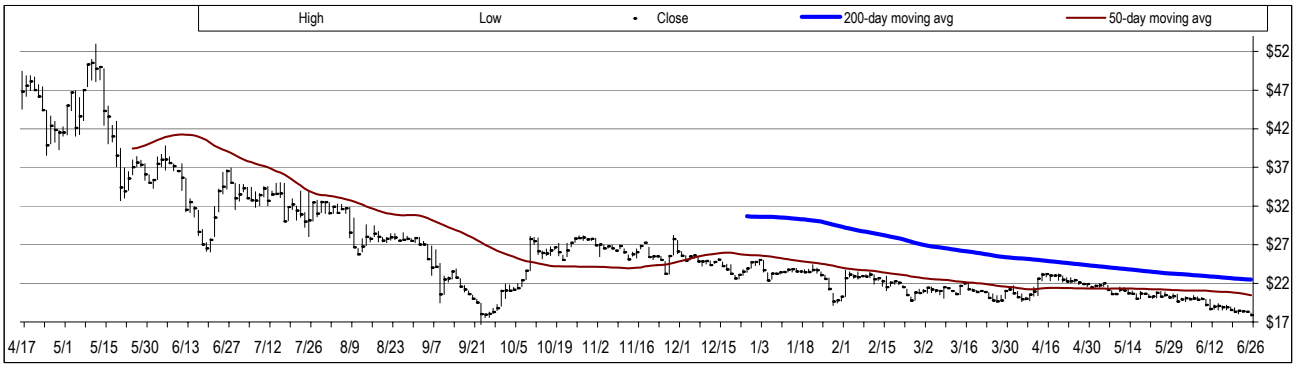
Title	Name	# of Yrs with Company	Previous Employer
Executive VP of Compliance & Development & Director	Barry Ellsworth	~3 Yrs, Founder	Red Rock Investment Partners (1999 - Present)
CEO & COO	Wayne Hoovestol	~1 Yrs	Hoovestol Inc
CFO	Jerry Peters	~0 Yrs	ONEOK Partners, CFO

Source: Company reports and JPMorgan.

Recent News and Events

- June 11, 2007 — announced that Jerry Peters has joined the management team of the company as its new Chief Financial Officer
- June 1, 2007 — entered into an agreement to purchase Essex Elevator. The elevator is located approximately 5 miles to the northeast of the company's Shenandoah ethanol plant.
- March 23, 2007 — closed a $50 million Credit Facility that the company will use to complete the construction of its second 50 million gallon ethanol plant being built near Superior, Iowa.

Figure 80: Green Plains Renewable Energy — Price Performance



Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Fuelcells
Financial Stats:	
Shares Outstanding	16,504
Share Price	$12.08
Market Cap.	$199
Debt	$0
Cash	$20
Enterprise Value	$178
Sales LTM	$5
2005A EPS	$0.13
2006A EPS	($0.07)
2007E EPS	($0.29)
FCF	$1
Valuation	
EV/Sales	33.2x
EV/EBITDA	NM
P/EPS (2007E)	NM
Sentiment	
FC Rating (1= Buy, 5=Sell)	2.3
# of Analysts Covering Co	3
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	13/2

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Hoku Scientific Inc. (HOKU/Not Covered/$12.08)

Company Description

Hoku Scientific, Inc. was founded in 2001 and is a materials science company focused on clean energy technologies. Historically, it has focused on developing new products for hydrogen fuel cells. As of May 2006, it diversified by forming two new businesses: an integrated photovoltaic, or PV, module business, and a polysilicon business, which is a primary material used in the manufacture of PV modules.

Figure 81: Management Profile

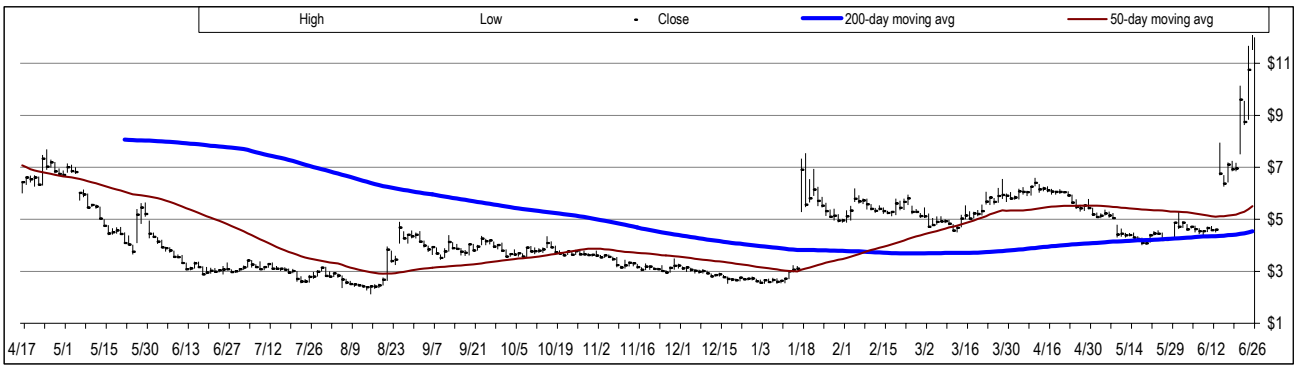
Title	Name	# of Yrs with Company	Previous Employer
CEO, Chairman, President	Dustin M. Shindo	~6 Yrs, Founder	Activitymax, Founder & CEO (Nov. 1999 - Feb. 2001)
CFO	Darryl S. Nakamoto	~2 Yrs	Frito Lay of Hawaii, Finance Analyst (Jan. 2003 - Dec. 2004)
CTO	Karl M. Taft III.	~6 Yrs, Founder	PCC Structurals, R&D (Oct. 1996 - Mar. 2001)
Business Dev. & G. Counsel	Scott B. Paul	~3 Yrs	Read Rite, Business Dev. & G. Counsel (Jun. 2002 - Jun. 2003)

Source: Company reports and JPMorgan.

Recent News and Events

- June 13, 2007 — signed a definitive contract with Suntech for sale and delivery of polysilicon to Suntech over a ten-year period beginning in mid-2009.The contract is for up to approximately $678 million over a ten-year period.
- January 18, 2007 — signed a definitive contract with Sanyo Electric Company, for the sale and delivery of polysilicon to SANYO over a seven-year period beginning in January 2009. Approximately $370 million may be payable to Hoku over the duration of the contract.
- January 7, 2007 — plans to build a $220 million polysilicon production plant in Pocatello, Idaho, with a payroll of 200 when the plant initiates operations.
- May 30, 2006 — announced that it will begin to manufacture and sell solar modules, in addition to manufacturing polysilicon. The company anticipates that the costs to establish such facilities will be approximately $250 million.

Figure 82: Hoku Scientific— Price Performance



Source: Factset and JPMorgan.

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Company Stats:

Technology Concentration	Fuelcells
Financial Stats:	
Shares Outstanding	12,770
Share Price	$4.49
Market Cap.	$57
Debt	$0
Cash	$24
Enterprise Value	$34
Sales LTM	$1
2005A EPS	NA
2006A EPS	($0.67)
2007E EPS	NA
FCF	($9)
Valuation	
EV/Sales	55.0x
EV/EBITDA	NM
P/EPS (2007E)	NA
Sentiment	
FC Rating (1= Buy, 5=Sell)	2
# of Analysts Covering Co	1
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	138/3

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

HydroGen Corp. (HYDG/Not Covered/$4.49)

Company Description

Through its wholly owned subsidiary (HydroGen LLC), the company manufactures multi-megawatt fuel cell systems for the distributed generation market. HydroGen's fuel cell systems compete in the 6-30 megawatt (MW) range at prices competitive with incumbent generating technologies in this size class.

Its proprietary air-cooled phosphoric acid fuel cell (PAFC) technology was developed by the Westinghouse Corporation with over $150MM of public and private investment. In 1993, the DOE determined the PAFC program to be commercial-ready, and discontinued its funding stream at a time when Westinghouse was under severe financial strain. The PAFC technology was then sold to a private investor, who subsequently sold it to HydroGen LLC in 2001. In July 2005, HydroGen LLC completed a $13.5 million equity financing and reverse merger with Chiste Corporation, which later changed its name to HydroGen Corporation.

Figure 83: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
Chairman, CEO	Mr. Leo Blomen	6 Yrs	Head of Intl, NUON, 4 yrs
President	Mr. Joshua Tosteson	NA	NA
COO	Mr. Scott Wilshire	2 Yrs	Director of Mktg, Plug Power, 6 yrs
CFO	Mr. Scott Schecter	3 Yrs	CFO, Fuel-Tech N.V., 10 yrs

Source: Company reports and JPMorgan.

Recent News and Events

- March 7, 2007 — approved to list its common shares on The Nasdaq Capital Market. The company's stock will begin trading under the symbol "HYDG".
- March 9, 2006 — awarded $1mm by the State of Ohio Third Frontier Fuel Cell Program to support HydroGen's advanced manufacturing development program.
- February 14, 2006 — appointed Mr. William F. Copeland as Manager of Manufacturing.

Figure 84: HydroGen Corp — Price Performance

Source: Factset and JPMorgan.

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Company Stats:

Technology Concentration	Fuelcells
Financial Stats:	
Shares Outstanding	91,766
Share Price	$1.21
Market Cap.	$111
Debt	$0
Cash	$51
Enterprise Value	$63
Sales LTM	$30
2005A EPS	($0.41)
2006A EPS	($1.42)
2007E EPS	($0.28)
FCF	($33)
Valuation	
EV/Sales	2.0x
EV/EBITDA	NM
P/EPS (2007E)	NM
Sentiment	
FC Rating (1= Buy, 5=Sell)	2.8
# of Analysts Covering Co	8
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	8/1

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Hydrogenics Corp. (HYGS/Not Covered/$1.21)

Company Description

Hydrogencis Corp was founded in 1995 and is based in Mississauga, Canada. HYGS' principal business is the development of clean energy solutions by commercializing hydrogen and fuel cell products. The company's portfolio of products include onsite generation systems for the hydrogen applications, fuel cell power systems that focus on fully integrated power modules and fuel cell hybrid power packs, and test systems.

Figure 85: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
Executive Chairman	Pierre Rivard	~12 Yrs, Founder	University of Toronto, Research Engineer (1994 -1995)
CEO & President	Daryl Wilson	~1 Yrs	Roylal Group Technologies, ZENON, TOYOTA
CFO	Lawrence Davis	~2 Yrs	Saturn Capital Corp, Founder
CTO	Joseph Cargnelli	~11 Yrs	Laboratory of Advanced Concepts, Engineer (1992 - 1993)

Source: Company reports and JPMorgan.

Recent News and Events

- May 15, 2007 — received an order for a fuel auxiliary power unit from MAN Nutzfahzeuge AG, one of Europe's largest manufacturers of commercial trucks, urban buses, coaches, intercity buses and bus-chassis.
- January 15, 2007 — entered into a distribution agreement with Heliocentris Fuel Cells AG, a leading company in the development and distribution of fuel cell and hydrogen technology to education, scientific and demonstration markets.
- January 9, 2006 — received an award to assist in the deployment of hydrogen fuel cells in forklifts at several manufacturing facilities in South Carolina.
- December 8, 2006 — announced that Daryl Wilson has been appointed President and CEO of the corporation. Mr. Wilson replaces co-founder Pierre Rivard, who announced in September that he would move into the advisory role of Executive Chair.

Figure 86: Hydrogenics Corp.— Price Performance

Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Hydropower
Financial Stats:	
Shares Outstanding	43,914
Share Price	$31.83
Market Cap.	$1,398
Debt	$1,178
Cash	$4
Enterprise Value	$2,457
Sales LTM	$926
2005A EPS	$1.62
2006A EPS	$2.15
2007E EPS	$1.87
FCF	NA
Valuation	
EV/Sales	2.8x
EV/EBITDA	9.0x
P/EPS (2007E)	17.0x
Sentiment	
FC Rating (1= Buy, 5=Sell)	3.2
# of Analysts Covering Co	5
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	40/21

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Idacorp Inc. (IDA/Neutral/$31.83)

Company Description

IDACORP is a holding company formed in 1998 and based in Boise, Idaho, whose principal subsidiary is Idaho Power Company (IPC). IPC is an investor-owned all-electric utility that serves a 24,000-square-mile service area. IPC is regulated by the FERC and state utility regulatory commissions of Idaho and Oregon. The company generates nearly 2/3 of the electricity it sells from 17 hydroelectric developments, and a portion from 3 coal-fired power plants (Wyoming, Nevada, and Oregon) and a natural gas-fired Power Complex (Idaho).

Figure 87: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
President and CEO	J. LaMont Keen	32 Yrs	NA
CFO	Mr. Darrel T. Anderson	11 Yrs	NA

Source: Company reports and JPMorgan.

Recent News and Events

- June 8, 2007 — filed an application with the Idaho Public Utilities Commission (IPUC) to increase the company's base rate for electricity an average of 10.35 percent for its Idaho customers. If approved, company revenues would increase $63.9 million annually. The commission now has seven months to consider the company's request.
- July 20 2006 — completed the sale of IDACORP subsidiary, IDACORP Technologies, Inc. to IdaTech UK Limited, a wholly-owned subsidiary of Investec Group Investments (UK) Limited. The after tax benefit of the sale at IDACORP is expected to be in the range of 24-26 cents per share.

Figure 88: Idacorp Inc — Price Performance

Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Fuelcells
Financial Stats:	
Shares Outstanding	38,044
Share Price	$1.28
Market Cap.	$49
Debt	$0
Cash	$18
Enterprise Value	$33
Sales LTM	$8
2005A EPS	($0.49)
2006A EPS	($0.43)
2007E EPS	($0.38)
FCF	($12)
Valuation	
EV/Sales	3.7x
EV/EBITDA	NM
P/EPS (2007E)	NM
Sentiment	
FC Rating (1= Buy, 5=Sell)	2
# of Analysts Covering Co	2
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	8/1

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Mechanical Technology Inc. (MKTY/Not Covered/$1.28)

Company Description

Mechanical Technology was co-founded by Sternlicht in 1961, and it is based in Albany, New York. The company operates through two subsidiaries: MTI MicroFuel Cells and MTI Instruments. The former (90% owned by MTI) focuses on developing and commercializing of cord-free rechargeable power pack technology for portable electronics — its patented Direct Methanol Fuel Cells technology (Mobion) generates electrical power using up to 100% ethanol as fuel and it is intended to replace lithium-ion and similar rechargeable batteries.

The second subsidiary, MTI Instruments, designs, manufactures, and sells high-performance test and measurement instruments and systems for the semiconductor, aviation, and general dimensional gauging markets.

Figure 89: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
Chairman	Steven N. Fischer	4 Yrs	Chairman and CEO, UHY Advisors NY, 8 yrs
CEO	Peng K. Lim	~0 Yrs	Tapewave
CFO	Cynthia A. Scheuer	10 Yrs	Senior Mgr, PricewaterhouseCoopers, 14 Yrs

Source: Company reports and JPMorgan.

Recent News and Events

- June 18, 2007 — delivered its next-generation, low power, advanced industrial design prototypes to its Korean partner.
- April 18, 2007 — announced that the U.S. Department of Energy ("DOE") Office of Hydrogen, Fuel Cells, and Infrastructure Technologies has reinstated MTI Micro´s funding for a cost-shared program originally awarded in May of 2004. The company may receive up to $1.8 million.
- January 12, 2006 — signed an agreement with SES AMERICOM Inc., a subsidiary of SES GLOBAL (a provider of satellite services) to evaluate the use and integration of MTI Micro´s Mobion into SES products.
- January 5, 2006 — announced an Early Adopter Alliance Agreement with a leading military OEM, as part of MTI Micro´s 2006 initiative to pursue key market opportunities and business relationships for Mobion® technology.

Figure 90: Mechanical Technology— Price Performance

Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Fuelcells
Financial Stats:	
Shares Outstanding	34,944
Share Price	$13.45
Market Cap.	$470
Debt	$0
Cash	$65
Enterprise Value	$458
Sales LTM	$0
2005A EPS	($0.68)
2006A EPS	($1.08)
2007E EPS	($1.15)
FCF	($46)
Valuation	
EV/Sales	NM
EV/EBITDA	NM
P/EPS (2007E)	NM
Sentiment	
FC Rating (1= Buy, 5=Sell)	4
# of Analysts Covering Co	1
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	36/3

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Medis Technologies (MDTL/Not Covered/$13.45)

Company Description

Medis Technologies was established in 1992 and is based in New York, New York. MDTL develops, manufactures, markets and distributes fuel cell products that include disposable and refuelable power packs for the consumer and military markets. The disposable power packs are portable auxiliary power sources that operate and charge portable electronic devices such as cell phones, PDAs, MP3 players, and handheld video games.

In addition, the company manufactures cytometers that enable continuous monitoring and handling of individual cells (its technology has been used in a number of studies to determine the efficacy of chemotherapeutic drugs).

Figure 91: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
Chairman, CEO, Secretary	Robert Lifton	~15 Yrs	American Jewish Congress, President (1988 - 1994)
CFO	Israel Fisher	~15 Yrs	Israel Aircraft, Deputy Manager (1990 - 1992)
CTO - New Energies	Gennadi Finkelshtain	~5 Yrs	More Energy, Co-founder & GM (1998 - 2002)

Source: Company reports and JPMorgan.

Recent News and Events

- April 25, 2007 — responded to a public announcement by a New York City law firm that it had initiated a purported class action against Medis and its CEO. Although Medis has not as yet been served with any legal process, it has reviewed the complaint as posted on the website of the plaintiff's law firm. Medis believes that such complaint is wholly without merit and will be vigorously contested. Medis reaffirmed the truthfulness of its April 13, 2007 press release upon which the lawsuit was premised.
- April 13, 2007 — begun commercial sales of its 24/7 fuel cell Power Packs to Microsoft (MSFT).
- November 16, 2006 — announced that it has completed the issuance of 1.5 million shares of its common stock in an offering.

Figure 92: Medis Technologies— Price Performance

Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Fuelcells
Financial Stats:	
Shares Outstanding	53,837
Share Price	$0.63
Market Cap.	$35
Debt	$10
Cash	$8
Enterprise Value	$42
Sales LTM	$0
2005A EPS	($0.34)
2006A EPS	($0.25)
2007E EPS	($0.17)
FCF	($7)
Valuation	
EV/Sales	191.7x
EV/EBITDA	NM
P/EPS (2007E)	NM
Sentiment	
FC Rating (1= Buy, 5=Sell)	2
# of Analysts Covering Co	1
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	4/1

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Millennium Cell (MCEL/Not Covered/$0.63)

Company Description

Millennium Cell develops hydrogen battery technology through a patented chemical process that stores and delivers hydrogen energy to power portable devices. The borohydride-based technology can be scaled to fit any application requiring high energy density for a long run time in a compact space. Since its inception in 1998, Millennium Cell has been awarded more than 25 patents and has 40 pending patents worldwide. MCEL's primary business model is to license its intellectual property to enable successful new products. When market leadership is required, it develops and sells its own products as well.

Figure 93: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
CEO	David Ramm	~7 Yrs	Integrated Electrical Services, CEO
CFO	John Giolli	~6 Yrs	Financial Management Positions
President	Adam Briggs	~6 Yrs	Gillette Company, Strategic OEM Sales

Source: Company reports and JPMorgan.

Recent News and Events

- May 5, 2007 — received additional funding from the National Center for Manufacturing Sciences (NCMS) to advance manufacturing technologies for the production of hydrogen storage products. This program will focus on lowering the cost and improving the durability of fuel cell cartridges to be manufactured by Millennium Cell and its licensees for fuel cell products.
- April 25, 2007 — received a Nasdaq Staff Deficiency Letter from the Nasdaq Stock Market. The letter states that for the last 30 consecutive business days, the bid price of the company's stock has closed below the $1.00 minimum per share requirement for continued listing. The Letter also stated that if at any time before October 22, 2007, the bid price of the company's common stock closes at or above $1.00 per share for a minimum of ten consecutive business days the company will be provided written notice that it complies with the rule.
- February 21, 2007 — completed a $6 million private placement of convertible unsecured debentures and warrants based on a 35% coverage ratio.

Figure 94: Millennium Cell — Price Performance

Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Biofuels
Financial Stats:	
Shares Outstanding	16,490
Share Price	$16.25
Market Cap.	$268
Debt	$15
Cash	$6
Enterprise Value	$228
Sales LTM	$322
2005A EPS	$0.54
2006A EPS	$0.99
2007E EPS	$1.17
FCF	$15
Valuation	
EV/Sales	0.6x
EV/EBITDA	4.5x
P/EPS (2007E)	13.8x
Sentiment	
FC Rating (1= Buy, 5=Sell)	2.8
# of Analysts Covering Co	5
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	36/3

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

MGP Ingredients Inc. (MGPI/Not Covered/$16.25)

Company Description

MGP Ingredients Inc. was founded in 1941 and is located in Atchison, Kansas. MGPI is a producer of ingredients and distillery products. The ingredients segment consists of wheat proteins for food and non-food applications, commodity wheat starches and gluten, and mill feeds. Distillery products consists of food-grade alcohol, ethanol, and distillers grain and carbon dioxide.

Figure 95: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
CEO	Laidacker Seaberg	~38 Yrs	NA
CFO	Brian Cahill	~15 Yrs	NA
COO	Tim Newkirk	~16 Yrs	NA

Source: Company reports and JPMorgan.

Recent News and Events

- March 15, 2007 — plans to expand its wheat gluten capacity in the US, as demand for the product increases following the recent move away from imported ingredients due to contamination scares.
- March 16, 2006 — approved plans for an $11.1 million capital project that is expected to improve production efficiencies and fulfill air emission control requirements at the company's Pekin, Ill., distillery.

Figure 96: MGP Ingredients— Price Performance

Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Geothermal
Financial Stats:	
Shares Outstanding	NA
Share Price	$0.79
Market Cap.	$42
Debt	NA
Cash	NA
Enterprise Value	NA
Sales LTM	NA
2005A EPS	NA
2006A EPS	NA
2007E EPS	NA
FCF	NA
Valuation	
EV/Sales	NA
EV/EBITDA	NA
P/EPS (2007E)	NA
Sentiment	
FC Rating (1= Buy, 5=Sell)	
# of Analysts Covering Co	
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	1/0

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Nevada Geothermal Power Inc. (NGLPF/Not Covered/$0.79)

Company Description

The company was founded in 1995 as Blue Desert Mining Inc. in British Columbia and has undergone numerous name changes, becoming Nevada Geothermal Power (NGP) in 05/2003. Since 1996 the shares have traded in the Alberta Stock Exchange, the Canadian Venture Exchange, and the Toronto Venture Exchange, with NGP gaining clearance to enter quotations on the OTC Bulletin Board in May '03.

NGP is developing geothermal energy projects in the US. NGP owns the geothermal leases to Blue Mountain in central Nevada. In addition, NGP owns geothermal rights in Black Warrior and Pumpernickel Valley and has initiated an exploratory drilling program in the latter with partners (including the DOE). NGP is looking for similar acquisitions to build its inventory of geothermal reservoirs.

Figure 97: Management Profile

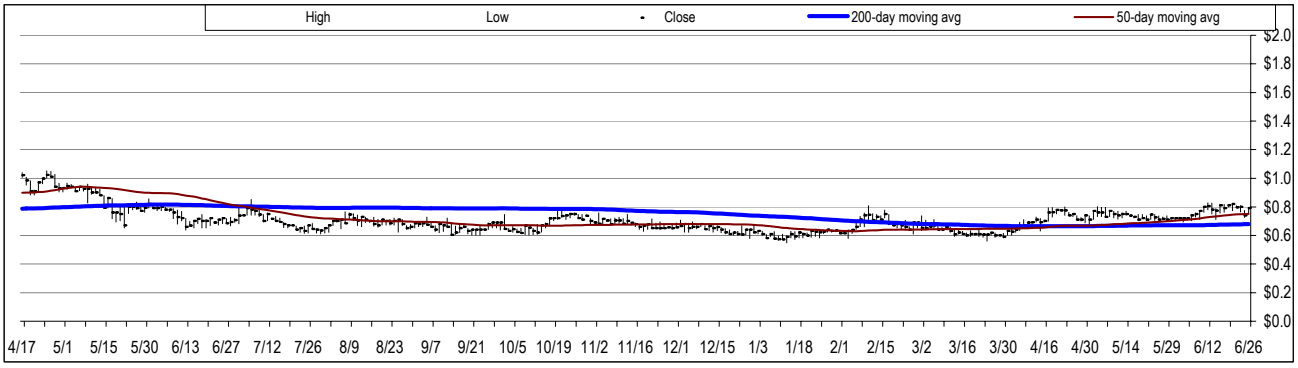
Title	Name	# of Yrs with Company	Previous Employer
President and CEO	Brian D. Fairbank	NA	NA
CFO	Don J. A. Smith	NA	NA

Source: Company reports and JPMorgan.

Recent News and Events

- March 5, 2007 — Nevada Public Utilities Commission approved on February 8, 2007, the 20-year Power Purchase Agreement (PPA) with Sierra Pacific Resources. Under the contract, the 'Faulkner 1 Power Plant' at Blue Mountain will supply between 18.75 MW and 31.25 MW (net) of electrical power; expected to come on line in 2009.
- Mar 1, 2007 — closed the second tranche of its previously announced private placement (February 12, 2007), including an over-allotment, for a total of 23,077,000 ("Units") at C$0.65 per Unit for gross proceeds of C$15,000,050. NGP issued 19,277,000 Units in the second tranche of the private placement.
- February 12, 2007 — closed its previously announced private placement of 3,850,000 units ("Units") at C$.65 per Unit for gross proceeds of approximately C$2,502,500.

Figure 98: Nevada Geothermal Power — Price Performance



Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Biofuels
Financial Stats:	
Shares Outstanding	75,342
Share Price	$0.52
Market Cap.	$40
Debt	$0
Cash	$5
Enterprise Value	$35
Sales LTM	$0
2005A EPS	($0.22)
2006A EPS	($0.20)
2007E EPS	($0.27)
FCF	($6)
Valuation	
EV/Sales	92.1x
EV/EBITDA	NM
P/EPS (2007E)	NM
Sentiment	
FC Rating (1= Buy, 5=Sell)	2.5
# of Analysts Covering Co	2
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	4/0

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

O2Diesel Corp (OTD/Not Covered/$0.52)

Company Description

O2Diesel Corporation produces a proprietary additive product designed to enable distillate liquid transportation fuels to burn cleaner by facilitating the addition of ethanol as an oxygenate to these fuels. The additive, O2D05, can be made from soybean oil, other vegetable oils, or animal fats. Blending O2D05 with ethanol and various grades of diesel fuel in turn creates a proprietary clean burning fuel. The company believes that tests conducted on its products have demonstrated that the use of the fuel can produce significant and verifiable reductions in emissions. To date, OTD's operations continue to be primarily focused on raising capital, performing product tests and demonstrations and bringing its product to market.

Figure 99: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
CEO	Alan Roe	~7 Yrs	Consultant
CFO	David Shipman	~2 Yrs	The Kurz Group, COO
COO	Richard Rogers	~2 Yrs	Performance Transportation, CEO

Source: Company reports and JPMorgan.

Recent News and Events

- May 16, 2007 — reported 1Q07 revenues of $181,713 as compared to revenues of $50,872 for the same period of 2006 with a net loss of $2.4 million, or ($0.03) per share for the quarter ended March 31, 2007 as compared with a net loss of $1.7 million, or ($0.11) per share in 1Q06.
- May 1, 2007 — received orders for in excess of 70,000 litres of its proprietary fuel technology from its Asian distribution partner, Energenics.
- April 4, 2007 — field testing a new renewable fuel being developed for the U.S. Department of Defense which is composed of 28% renewable sources — ethanol, biodiesel, and the company's patented and proprietary biomass-derived stabilizing additive.
- February 20, 2007 — entered into a $10 million Common Stock Purchase Agreement with Fusion Capital Fund II, LLC, a Chicago-based institutional investor.
- April 20, 2006 — signed two separate financing agreements totaling $6.5mm in equity and warrants. The company plans to use the financing to fund working capital needs and meet the $6.0 million shareholders' equity listing requirement.

Figure 100: O2Diesel Corp. — Price Performance

Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Geothermal
Financial Stats:	
Shares Outstanding	38,121
Share Price	$35.55
Market Cap.	$1,355
Debt	$489
Cash	$124
Enterprise Value	$1,737
Sales LTM	$269
2005A EPS	$0.48
2006A EPS	$0.99
2007E EPS	$0.84
FCF	NA
Valuation	
EV/Sales	6.4x
EV/EBITDA	16.1x
P/EPS (2007E)	42.2x
Sentiment	
FC Rating (1= Buy, 5=Sell)	2.4
# of Analysts Covering Co	7
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	45/14

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Ormat Technologies Inc. (ORA/Not Covered/$35.55)

Company Description

Ormat was founded in 1965 and is headquartered in Sparks, Nevada. The company is vertically integrated and operates in two segments: 1) its Electricity Segment (which amounts to around 75% of revenues and consists of the sale of electricity from its geothermal power plants), and 2) its Product Segment (which consists of the design, manufacturing, and sale of equipment and related installation, construction, and operation services to third party geothermal and recovered energy power plants).

Since the beginning of 2003, Ormat has increased its generating capacity mainly through acquisitions. The company owns and operates geothermal projects in US, Guatemala, Kenya, Nicaragua, and the Philippines.

Figure 101: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
Chairman	Mr. Lucien Bronicki	NA	NA
President and CEO	Mrs. Yehudit 'Dita' Bronicki	NA	NA
CFO	Mr. Joseph Tenne	NA	NA

Source: Company reports and JPMorgan.

Recent News and Events

- May 24, 2007 — signed a 20-year Power Purchase Agreement (PPA) with Nevada Power Company, a subsidiary of Sierra Pacific Resources, for the sale of energy produced from the Grass Valley Geothermal Power Plant to be built in Lander County in northern Nevada.
- August 3, 2006 — signed a 20-year Power Purchase Agreement (PPA) with Nevada Power Company, a subsidiary of Sierra Pacific Resources, for the sale of energy to be produced from the Carson Lake (near Fallon) and Buffalo Valley Power Plants, two new geothermal power plants to be built in Lander and Churchill Counties in northern Nevada.
- June 25, 2006 — signed an agreement to purchase from International Finance Corporation a 14.09% partnership interest (13.67% on a fully diluted basis) in Orzunil I de Electricidad, Limitada (Orzunil), which owns the Zunil Geothermal Project in Guatemala.

Figure 102: Ormat Technology Inc. — Price Performance

Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Biofuels
Financial Stats:	
Shares Outstanding	40,560
Share Price	$12.63
Market Cap.	$512
Debt	$108
Cash	$51
Enterprise Value	$567
Sales LTM	$226
2005A EPS	($0.40)
2006A EPS	($0.07)
2007E EPS	$0.30
FCF	($87)
Valuation	
EV/Sales	2.0x
EV/EBITDA	27.7x
P/EPS (2007E)	42.1x
Sentiment	
FC Rating (1= Buy, 5=Sell)	3
# of Analysts Covering Co	12
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	45/1

Source: Factset & JPMorgan.
Note: Earnings estimates and rating as per First Call.

Pacific Ethanol Inc (PEIX/Not Covered/$12.63)

Company Description

Pacific Ethanol was founded in 2003 and is based in Fresno, California. PEIX engages in the development, production, distribution and marketing of renewable fuels in the western US. The company employs existing traditional production techniques and concurrently explores advanced processing methods, including hydrogen fuel cells. In addition, the company engages in the identification and development of other renewable fuel technologies, such as cellulose-based biofuels. The company is constructing an ethanol production facility in Madera County, California, and developing four additional plants on the West Coast.

Figure 103: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
CEO, President	Neil M. Koehler	~3Yrs	Founded ethanol marketing cos (~20 yrs exp)
Chairman, Founder	Bill Jones	~4Yrs, Founder	Politican in California
CFO	Douglas Jeffries	~0Yrs	eBay, VP of Finance & Chief Accounting Officer

Source: Company reports and JPMorgan.

Recent News and Events

- June 8, 2007 — filed a shelf registration statement with the SEC that, if declared effective by the SEC, would allow the company to sell, from time to time, up to $250 million of its common stock in one or more offerings.
- May 4, 2007 — appointed Douglas Jeffries as CFO.
- February 28, 2007 — closed on a $325 million senior secured credit facility. The facility will be used to recapitalize the company's Madera, California, ethanol plant, to provide take-out financing on the completion of the company's Boardman, Oregon, ethanol plant, and to provide both construction and term loan financing for the company's Burley, Idaho, ethanol plant and two additional ethanol plants that the company has under development
- October 17, 2006 — acquired from Eagle Energy a 42% minority interest in Front Range Energy, the owner of a 40 million gallon nameplate ethanol plant located in Windsor, Colorado.

Figure 104: Pacific Ethanol Inc. — Price Performance

Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Biofuels
Financial Stats:	
Shares Outstanding	31,070
Share Price	$4.25
Market Cap.	$132
Debt	$136
Cash	$164
Enterprise Value	$112
Sales LTM	$0
2005A EPS	NA
2006A EPS	NA
2007E EPS	NA
FCF	NA
Valuation	
EV/Sales	NM
EV/EBITDA	NM
P/EPS (2007E)	NA
Sentiment	
FC Rating (1= Buy, 5=Sell)	
# of Analysts Covering Co	
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	12/0

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Panda Ethanol (PDAE/Not Covered/$4.25)

Company Description

Panda Ethanol was organized to develop, own and operate a multi-site portfolio of manure-fueled and gas-fueled ethanol plants. PDAE's inaugural ethanol project in Hereford, Texas, is financed and under construction. It is also in various stages of development of several additional ethanol projects in Yuma, Colorado; Haskell, Kansas; Sherman County, Texas; Muleshoe, Texas, and Lincoln County, Nebraska. While the company currently does not produce ethanol, it currently estimates that the Hereford facility will begin producing ethanol in the fourth quarter of 2007 and will be fully operational during the first quarter of 2008. The Hereford, Texas; Yuma, Colorado, and Haskell, Kansas, facilities are designed to each produce approximately 115 million gallons per year

Figure 105: Management Profile

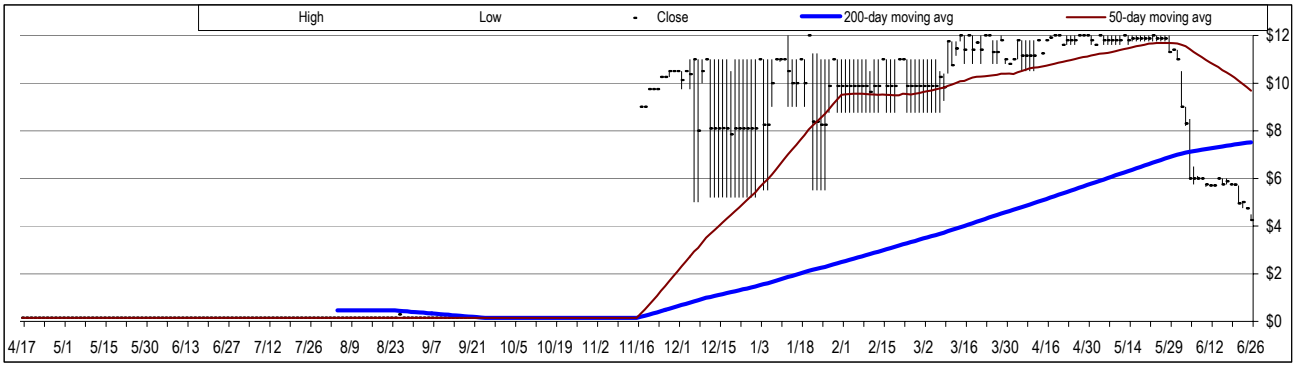
Title	Name	# of Yrs with Company	Previous Employer
CEO, Founder	Todd Carter	~25 Yrs	NA
Executive VP	Janice Carter	~25 Yrs	NA
Senior VP	William Nordlund	~14 Yrs	Energy Consultant

Source: Company reports and JPMorgan.

Recent News and Events

- June 5, 2007 — intends to offer $140 million aggregate principal amount of 6 percent Convertible Redeemable Senior Notes due 2014. The notes will be convertible into shares of common stock of the company. The conversion price and other terms of the notes will be determined by negotiations between the company and the initial purchaser of the notes. Given the relative illiquidity of its common stock, the company expects that the initial conversion price of the notes will be in the range of $5 per share of common stock.
- March 21, 2007 — received an air permit for the company's Haskell County fuel ethanol plant. When completed in late 2007, the facility will produce more than 100 million gallons of fuel ethanol per year.
- September 19, 2005 — announced it will build a 100 million gallon fuel plant in Kansas. The plant will use a billion pounds of cattle manure each year as a renewable fuel to power the plant's operation.

Figure 106: Panda Ethanol. — Price Performance



Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Fuelcells
Financial Stats:	
Shares Outstanding	86,845
Share Price	$2.92
Market Cap.	$254
Debt	$0
Cash	$251
Enterprise Value	($4)
Sales LTM	$8
2005A EPS	($0.66)
2006A EPS	($0.58)
2007E EPS	($0.55)
FCF	($43)
Valuation	
EV/Sales	-0.5x
EV/EBITDA	NM
P/EPS (2007E)	NM
Sentiment	
FC Rating (1= Buy, 5=Sell)	3.3
# of Analysts Covering Co	6
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	11/3

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Plug Power Inc. (PLUG/Not Covered/$2.92)

Company Description

Plug Power Inc. was founded in 1997 and is located in Latham, New York. PLUG is a development stage company that designs, develops, and manufactures stationary energy systems (onsite, backup, and H2 generation). The company's near-term objectives are to improve product performance, and reduce manufacturing and operating costs for its systems.

Figure 107: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
CEO	Roger Saillant	~6 Yrs	Ford and Visteon, GM (30+ years combined at the two cos)
CFO	Gerald Anderson	~0 Yrs	Intermagnetic Gerneral Corporation
CTO	John F. Elter	~6 Yrs	Eastman Kodak, Chief Technology Officer

Source: Company reports and JPMorgan.

Recent News and Events

- June 6, 2007 — appointed Gerald Anderson to the position of Chief Financial Officer (CFO).
- May 7, 2007 — acquired General Hydrogen Corporation, a leader in the development and commercialization of fuel cell power units that provide motive power for electric lift trucks and other mobile industrial equipment, for $10million.
- March 15, 2007 — executed a definitive agreement to acquire Cellex Power Products Inc., a provider fuel cell power solutions for industrial vehicles, for $45 million in cash.
- February 28, 2007 — engaged David Waldek to serve as interim Chief Financial Officer (CFO) following the recent resignation of its former CFO.
- February 22, 2007 — announced changes to its corporate structure, allowing CEO Dr. Roger Saillant to have more direct involvement with daily operations while also creating a more traditional and optimal organizational structure.
- October 31, 2006 — selected by the U.S. Department of Energy (DOE) to receive three separate awards totaling $8.6 million for hydrogen fuel cell research, development and demonstration projects.

Figure 108: Plug Power— Price Performance

Source: Factset and JPMorgan.

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Company Stats:

Technology Concentration	lybrid Electric Veh.
Financial Stats:	
Shares Outstanding	65,938
Share Price	$1.53
Market Cap.	$100
Debt	$47
Cash	$14
Enterprise Value	$116
Sales LTM	$158
2005A EPS	($0.57)
2006A EPS	NA
2007E EPS	NA
FCF	($58)
Valuation	
EV/Sales	0.7x
EV/EBITDA	NM
P/EPS (2007E)	NA
Sentiment	
FC Rating (1= Buy, 5=Sell)	3
# of Analysts Covering Co	3
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	11/1

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Quantum Fuel System Tech. (QTWW/Not Covered/$1.53)

Company Description

Quantum was incorporated in 2000 in Irvine, California, as a wholly owned division of IMPCO Technologies, and was spun-off to shareholders on 07/2002. QTWW operates in two segments. Under its Fuel Systems segment, the company designs, engineers, and manufactures packaged fuel systems for hybrid and fuel cell vehicles, as well as hydrogen refueling systems. In addition, through its Textar Automotive Group, QTWW does second-stage manufacturing of pick-up trucks and sport utilities.

The company has product commercialization alliances with General Motors, AM General, and Sumitomo; while its customer base includes most of the largest vehicle manufacturers in the world as well as the US Army.

Figure 109: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
President and CEO	Mr. Alan P. Niedzwiecki	7 Yrs	President, NGV Corporation, 9 yrs
COO	Jeffrey P. Beitzel	2 Yrs	Co-CEO of Starcraft
CFO	Mr. W. Brian Olson	NA	NA

Source: Company reports and JPMorgan.

Recent News and Events

- June 22, 2007 — agreed to privately place $18.75 million of common stock at a discount with some existing and new institutional investors.
- May 14, 2007 — signed a binding letter of intent to acquire a 24.9 percent equity stake in a German solar energy technology company that develops and manufactures high-efficiency photovoltaic modules for a number of innovative applications, including automotive, residential, and commercial applications.
- May 1, 2007 — signed an agreement for the marketing, sales, and distribution in India of its leading alternative fuel vehicle products and systems for compressed natural gas (CNG), blends of natural gas and hydrogen, and liquid petroleum gas
- April 18, 2007 — announced that its strategic partner in lithium-ion battery systems, Advanced Lithium Power Inc. (ALP), has signed a Memorandum of Understanding with a leading Chinese automaker to jointly develop battery-dominant propulsion systems for passenger vehicles, with the goal of establishing a cooperative venture to commercialize products globally.

Figure 110: Quantum Fuel System Tech — Price Performance

Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Solar
Financial Stats:	
Shares Outstanding	42,114
Share Price	$1.19
Market Cap.	$51
Debt	$12
Cash	$5
Enterprise Value	$57
Sales LTM	$34
2005A EPS	NA
2006A EPS	($0.50)
2007E EPS	($0.18)
FCF	NA
Valuation	
EV/Sales	1.6x
EV/EBITDA	NM
P/EPS (2007E)	NM
Sentiment	
FC Rating (1= Buy, 5=Sell)	2
# of Analysts Covering Co	1
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	4/0

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Satcon Technology Corp (SATC/Not Covered/$1.19)

Company Description

Fouded in 1985, SatCon Technology Corporation designs and manufactures products for electrical power conversion and control in markets such as alternative energy, hybrid electric vehicles, distributed power generation, power quality, semiconductor fabrication capital equipment, industrial motors and drives, and high reliability defense electronics. The company believes that the greatest potential for SatCon is in the area of alternative energy and distributed power generation.

Figure 111: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
CEO	David Eisenhaure	22 Yrs	Charles Stark Draper Laboratory
CTO	Dr. Leo Casey	7 Yrs	N/A

Source: Company reports and JPMorgan.

Recent News and Events

- May 22, 2007 — awarded a Phase I SBIR contract with the U.S. Air Force Research Laboratory to develop a high speed, power dense generator for airborne applications in the range of 100-300 kW scalable to the MW-class for directed energy weapon (DEW) power supplies.
- January 30, 2007 — awarded a Phase I Small Business Innovative Research (SBIR) contract with the U. S. Navy to develop insulation technology for advanced propulsion motor designs for future "all-electric" ships.
- November 30, 2006 — awarded a $2.7M Stage 1 contract for an energy storage and delivery system capable of providing 8 megawatts of power for several seconds. When the total system is fully implemented the power levels will be in excess of 20 megawatts
- August 10, 2006 — received a purchase order, valued in excess of $5 million, issued through Fluor Canada Ltd., acting as representative for a client. The order is for over 30 MW of Inverpower DC power electronics.

Figure 112: Satcon Technology Corp. — Price Performance

Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Solar
Financial Stats:	
Shares Outstanding	8,263
Share Price	$9.73
Market Cap.	$80
Debt	$1
Cash	$4
Enterprise Value	$78
Sales LTM	$20
2005A EPS	$0.01
2006A EPS	($1.03)
2007E EPS	NA
FCF	($9)
Valuation	
EV/Sales	3.6x
EV/EBITDA	NM
P/EPS (2007E)	NA
Sentiment	
FC Rating (1= Buy, 5=Sell)	
# of Analysts Covering Co	
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	13/2

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Spire Corp (SPIR/Not Covered/$9.73)

Company Description

Founded in 1969, Spire Corp. operates in four principal business areas: biomedical, solar equipment, solar systems and optoelectronics. In the solar equipment segment, SPIR develops, manufactures and markets specialized equipment for the production of terrestrial PV modules. In the solar systems area, it provides custom and building integrated photovoltaic (BIPV) modules, stand-alone emergency power back up and electric power grid-connected distributed power generation systems employing photovoltaic technology.

Figure 113: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
CEO & Chairman of the Board	Roger G. Little	37 Yrs (foudner)	N/A
COO	Rodger LaFavre	7 Yrs	Stone & Webster Engineering Corp

Source: Company reports and JPMorgan.

Recent News and Events

- April 2, 2007 — entered into a Teaming Agreement with KUKA Schweissanlagen GmbH, of Augsburg, Federal Republic of Germany, to combine its machine technology to address the growing demand for fully automated large-scale photovoltaic (PV) manufacturing lines.
- February 5, 2007 — entered into a contract to provide a 15-megawatt turnkey crystalline silicon photovoltaic (PV) module production line to a new European manufacturer.
- January 16, 2007 — received a $600,000 contract from NASA's John Glenn Research Center in Cleveland, Ohio to further develop a new type of thermo photovoltaic, TPV cell that produces electricity from heat.

Figure 114: Spire Corp — Price Performance

Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Solar
Financial Stats:	
Shares Outstanding	74,942
Share Price	$61.85
Market Cap.	$4,635
Debt	$200
Cash	$215
Enterprise Value	$4,563
Sales LTM	$237
2005A EPS	($0.22)
2006A EPS	$0.51
2007E EPS	$1.13
FCF	($66)
Valuation	
EV/Sales	13.5x
EV/EBITDA	68.2x
P/EPS (2007E)	54.9x
Sentiment	
FC Rating (1= Buy, 5=Sell)	2.1
# of Analysts Covering Co	25
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	66/24

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

SunPower Corp (SPWR/Not Covered/$61.85)

Company Description

Founded in 1988, SunPower designs, manufactures, and markets solar cells and panels. The company received initial financial support from the Energy Power Research Institute. In 2002, Cypress Semiconductor acquired a majority stake in the company and supported all development and manufacturing of SPWR's A-300 solar cell. By November 2005, Cypress decided to pursue an initial public offering for its SunPower unit.

SPWR differs from conventional PV technologies in that the metal contacts needed to collect and conduct electricity are on the back surface of the solar cells – away from the sunlight. The company believes that their technology produces up to 50% more power per square foot as compared with conventional solar cells.

Figure 115: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
CEO, Director	Thomas Werner	4 Yrs	Silicon Light Machines, Inc. (CEO 1998-2001)
CFO	Emanuel Hernandez	2 Yrs	Cypress Semicondutor, (CFO)
CTO, President	Dr. Richard Swanson	14 Yrs	Stanford University (Professor)
COO	PM Pai	2 Yrs	Moser Baer India Ltd. (President)

Source: Company reports and JPMorgan.

Recent News and Events

- June 5, 2007 — Macy's announced it will install solar power systems and significantly reduce energy consumption in 26 stores throughout California in partnership with SunPower.
- May 7, 2007 — signed a contract with Wal-Mart for solar electric power systems totaling 4.6 megawatts on seven Wal-Mart facilities in California.
- November 15, 2006 — signed a definitive agreement to acquire PowerLight Corp., a privately owned solar systems provider based in Berkeley, Calif. PowerLight is a leading global provider of large-scale solar power systems,
- September 29, 2006 — announced that it will invest in a joint venture with Woongjin Coway to manufacture mono-crystalline silicon ingots. This joint venture will operate in Korea, with polysilicon to be supplied primarily from DC Chemical,

Figure 116: Sunpower Corp — Price Performance

Source: Factset and JPMorgan.

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Company Stats:

Technology Concentration	lybrid Electric Veh.
Financial Stats:	
Shares Outstanding	25,143
Share Price	$4.24
Market Cap.	$107
Debt	$1
Cash	$8
Enterprise Value	$98
Sales LTM	$6
2005A EPS	($0.11)
2006A EPS	($0.13)
2007E EPS	($0.11)
FCF	($4)
Valuation	
EV/Sales	17.0x
EV/EBITDA	NM
P/EPS (2007E)	NM
Sentiment	
FC Rating (1= Buy, 5=Sell)	1.5
# of Analysts Covering Co	2
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	6/2

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

UQM Technologies (UQM/Not Covered/$4.24)

Company Description

UQM Technologies is a developer and manufacturer of energy efficient, power dense, electric motors, generators and power electronic controllers for use in electric, hybrid electric, and fuel-cell electric vehicles, as well as under-the-hood power accessories and distributed power generation products.

While the company's R&D activities are almost entirely funded by its customers, in most cases UQM retains all of the intellectual property rights in the developed technologies. UQM's revenue is derived from two principal sources: 1) funded contract research and development services performed for partners and the US Government, and 2) the manufacture and sale of its products.

Figure 117: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
Chairman, CEO and Pres	Mr. William G. Rankin	15 Yrs	Deere & Company, Gnrl Mngr, 16 yrs
CFO	Mr. Donald A. French	19 Yrs	VP, Gaechter, Inc.
VP of Operations, Mktg & Sales	Mr. Ronald M. Burton	3 Yrs	VP Engineering, Stature Electric

Source: Company reports and JPMorgan.

Recent News and Events

- May 1, 2007 — received an order from the Denver Regional Transportation District for UQM generators and motor controllers to retrofit an additional eighteen hybrid electric mall shuttle buses.
- January 17, 2007 — received a $9.25 million production order from Phoenix Motorcars, Inc. for UQM electric propulsion systems to power Phoenix's newly introduced all electric powered Sport Utility Truck (SUT).
- August, 2006 — announces an order from Chitron, Inc. for propulsion system to power hybrid electric urban Bus in China.

Figure 118: UQM Technologies — Price Performance

Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Biofuels
Financial Stats:	
Shares Outstanding	67,975
Share Price	$10.79
Market Cap.	$734
Debt	$237
Cash	$215
Enterprise Value	$747
Sales LTM	$125
2005A EPS	NA
2006A EPS	$0.41
2007E EPS	$0.57
FCF	NA
Valuation	
EV/Sales	3.0x
EV/EBITDA	22.4x
P/EPS (2007E)	19.0x
Sentiment	
FC Rating (1= Buy, 5=Sell)	2.3
# of Analysts Covering Co	6
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	18/10

Source: Factset & JPMorgan.
Note: Earnings estimates and rating as per First Call.

US BioEnergy Corp (USBE/Not Covered/$10.79)

Company Description

US BioEnergy Corporation is a producer and marketer of ethanol and distillers grains. The company currently owns and operates four ethanol plants and has three additional ethanol plants under construction. Upon completion of these initiatives, the company will own and operate seven plants with combined expected ethanol production capacity of 600 million gallons per year.

Figure 119: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
CEO	Gordon Ommen	~3 Yr	Capitaline Advisors (Private Equity)
CFO	Richard Atkinson	1 Yr	Pope & Talbot, CFO
Corporate Development	Chad Hatch	~2 Yr	Capitaline Advisors (Private Equity)

Source: Company reports and JPMorgan.

Recent News and Events

- May 31, 2007 — acquired Millennium Ethanonl adding 100 mm/year of production capacity. Total transaction value between $225 - $230 mm.
- May 14, 2007 — announced net income of $5.2 mm on $132mm in revenues. Production volume for the quarter was 58.7 mm gallons.
- May 11, 2007 — acquired options on land in Nebraska.
- December 15, 2006 — announced its IPO of 10mm shares of its common stock priced at $14.00.

Figure 120: US Bioenergy Corporation — Price Performance

Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Biomass
Financial Stats:	
Shares Outstanding	17,623
Share Price	$1.03
Market Cap.	$22
Debt	$225
Cash	$39
Enterprise Value	$216
Sales LTM	$21
2005A EPS	($0.85)
2006A EPS	($1.72)
2007E EPS	NA
FCF	($23)
Valuation	
EV/Sales	10.1x
EV/EBITDA	176.1x
P/EPS (2007E)	NA
Sentiment	
FC Rating (1= Buy, 5=Sell)	
# of Analysts Covering Co	
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	7/1

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

US Energy Systems (USEY/Not Covered/$1.03)

Company Description

U.S. Energy Systems, Inc. owns and operates energy facilities producing electricity and energy alternatives to natural gas. The Company owns a 100% interest in U.S. Energy Biogas Corp. ("USEB") effective November 28, 2006. USEB owns and operates 23 landfill gas to energy projects in the United States, 20 of which produce electricity and three of which sell landfill gas as an alternative to natural gas.

Figure 121: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
CEO	Asher Fogel	~9 Yr	Citicorp Securities, Corp. Finance
Chief Accounting Officer	Richard Augustine	~9 Yr	Zahren Alt. Power Corp, President
VP of Finance and Analysis	James Boffardi	~5 Yr	CIBC, Associates

Source: Company reports and JPMorgan.

Recent News and Events

- June 1, 2007 — announced that U.S. Energy Biogas Corp., the Company's U.S.-based renewable energy business, has successfully completed its reorganization under Chapter 11 of the U.S. Bankruptcy Code. The press release also stated the following "USEB generates gross profit margins in excess of 45 percent, and we believe the business has the opportunity to double its free cash flow over the next 4 years." The critical achievements of USEB's Chapter 11 reorganization were the refinancing of a loan agreement that prevented USEB from growing or otherwise benefiting USEY's shareholders; the retirement of approximately $65,000,000 of long term subsidy repayment obligations with a $5,250,000 payment to the Illinois Commerce Commission; and the payment, in full, of valid supplier and creditor invoices.
- May 29, 2007 — received a Staff Determination Letter from the Nasdaq Stock Market notifying the Company of its non-compliance for the Company's failure to file its Form 10-Q for the period ended March 31, 2007.

Figure 122: US Energy Systems — Price Performance

Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Biofuels
Financial Stats:	
Shares Outstanding	76,612
Share Price	$13.25
Market Cap.	$1,019
Debt	$209
Cash	$288
Enterprise Value	$895
Sales LTM	$558
2005A EPS	NA
2006A EPS	$1.48
2007E EPS	$0.40
FCF	$26
Valuation	
EV/Sales	1.5x
EV/EBITDA	5.3x
P/EPS (2007E)	33.3x
Sentiment	
FC Rating (1= Buy, 5=Sell)	3.2
# of Analysts Covering Co	18
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	31/13

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Verasun Energy (VSE/Not Covered/$13.25)

Company Description

VeraSun Energy Corporation is one of the largest producers of ethanol in the U.S. based on production capacity. VERA focuses primarily on the production and sales of ethanol and its co-products. The company owns and operates three of the largest ethanol production facilities in the US, with a combined ethanol capacity of 340 mm gallons/year (670 mm gallons/year upon completion of other facilities). In addition to producing ethanol, it produces and sells wet distillers grains, or WDGS, and dry distillers grains, or DDGS, as ethanol co-products.

Figure 123: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
CEO	Donald Endres	~6 Yrs	Glacial Lakes Energy, Co-founder
CFO	Danny Herron	~1 Yrs	Swift & Co, CFO
Sales & Marketing, Co-founder	William Honnef	~6 Yrs	Expressgold.com, 2000

Source: Company reports and JPMorgan.

Recent News and Events

- May 14, 2007 — announced the pricing of $450 million in aggregate principal amount of 9 3/8 percent Senior Notes due 2017 with an interest rate at 9 3/8%. The company intends to use the proceeds to finance a portion of the costs of construction and startup of a 110 mm gallon/yr and to purchase and install corn oil extraction equipment at its three operating facilities.
- May 8, 2007 — announced 1Q07 with increasing revenues by 30.5 percent from the first quarter of 2006, generated cash flow from operations of $19.8 million. VSE incurred a net loss of $312,000 for the quarter primarily due to increased corn costs, startup expenses relating to the Charles City facility and expenses associated with implementation of Sarbanes-Oxley compliance.
- November 3, 2006 — announced plans to produce biodiesel from oil extracted from distillers grains, a co-product of the ethanol production process. VeraSun would be the first company to develop a large-scale, commercial facility for biodiesel production from a co-product of the ethanol production process, creating two biofuels from the same feedstock.
- June 14, 2006 —priced its IPO of 18.25mm shares at $23 per share. VeraSun is selling 11,000,000 shares and selling shareholders are selling 7,250,000 shares.

Figure 124: Verasun Energy — Price Performance

Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Wind
Financial Stats:	
Shares Outstanding	10,693
Share Price	$2.15
Market Cap.	$23
Debt	$0
Cash	$0
Enterprise Value	$23
Sales LTM	$1
2005A EPS	NA
2006A EPS	NA
2007E EPS	NA
FCF	($0)
Valuation	
EV/Sales	NM
EV/EBITDA	NM
P/EPS (2007E)	NA
Sentiment	
FC Rating (1= Buy, 5=Sell)	
# of Analysts Covering Co	
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	3/0

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Wind Energy America Inc. (WNEA/Not Covered/$2.15)

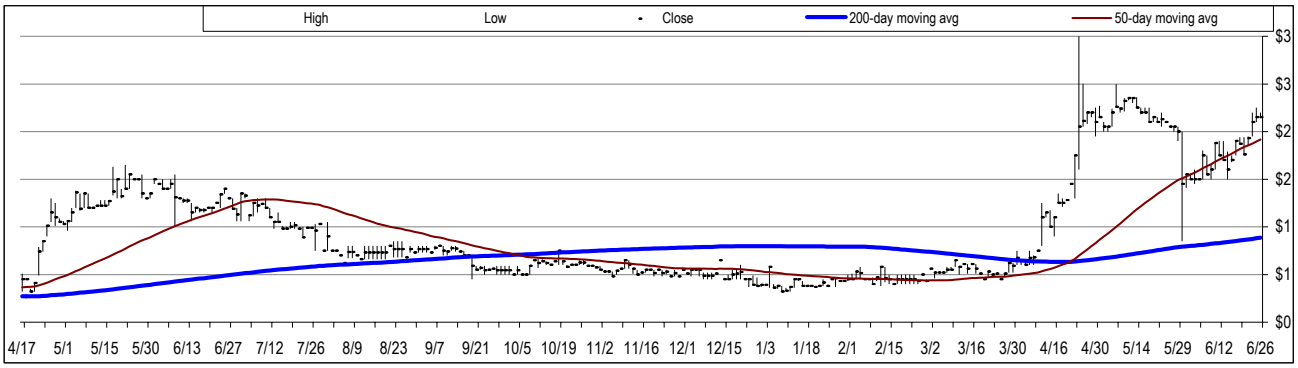
Company Description

Wind Energy America Inc completed its first transaction to engage in the rapidly growing industry of generating electricity from wind power. WNEA intends to continue acquiring additional wind farm assets, either through purchase or direct development. WNEA's principal corporate mission is to build a substantial and profitable portfolio of wind energy assets. In February-March 2007 the WNEA conducted its first transaction to implement its goal to acquire a portfolio of wind power assets when it purchased a $200,000 interest in Averill Wind LLC.

Recent News and Events

- May 24, 2007 — entered into a Memorandum of Understanding (MOU) with Boreal Energy, Inc. to examine new opportunities relating to wind energy projects.
- April 24, 2007 — entered into a Letter of Intent (LOI) to purchase the developer's stake in four wind farms owned by Northern Alternative Energy Inc. The wind farms are located on Buffalo Ridge in southwest Minnesota, have a combined nameplate rating of 55 MW (megawatts), and collectively produce approximately 170,000,000 Kwhrs (kilowatt hours) of electricity annually.

Figure 125: Wind Energy America Inc. — Price Performance



Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Biofuels
Financial Stats:	
Shares Outstanding	28,609
Share Price	$1.36
Market Cap.	$39
Debt	$0
Cash	$21
Enterprise Value	$18
Sales LTM	$11
2005A EPS	($0.83)
2006A EPS	($0.93)
2007E EPS	($0.82)
FCF	($11)
Valuation	
EV/Sales	1.7x
EV/EBITDA	NM
P/EPS (2007E)	NM
Sentiment	
FC Rating (1= Buy, 5=Sell)	5
# of Analysts Covering Co	1
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	16/0

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Xethanol Corporation. (XTHN/Not Covered/$1.36)

Company Description

Xethanol Corporation ("XTHN") is an biotechnology-driven company in the biomass-to-ethanol industry. The company produces and markets ethanol and its co-products. The company plans to convert biomass that is currently being land filled into ethanol by utilizing proprietary biotechnologies that will extract and ferment sugars from waste by building ethanol plants close to biomass sources and in proximity to high-demand ethanol markets.

Figure 126: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
CEO, President, Director	David R. Ames	~0 Yrs	Alterna Energy (current CEO & Chairman)
CFO	Gary Flicker	~0 Yrs	Flicker Financial
COO	Thomas Endres	~0 Yrs	West Point Federal Credit Union, US Army

Source: Company reports and JPMorgan.

Recent News and Events

- June 25, 2007 — Thomas J. Endres was appointed as the Chief Operating Officer of the company.
- February 02, 2007 — announced that it had appointed Gary Flicker as its new Executive Vice President and Chief Financial Officer. Larry Bellone, the Company's former CFO, will transition to a newly created position, Executive Vice President, Corporate Development
- November 10, 2006 — announced that the Board of Directors has elected William P. Behrens as non-executive Chairman of the Board and David R. Ames as President and Chief Executive Officer of the Company.

Figure 127: Xethanol Corporation— Price Performance

Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Solar
Financial Stats:	
Shares Outstanding	157,020
Share Price	$0.46
Market Cap.	$72
Debt	NA
Cash	NA
Enterprise Value	NA
Sales LTM	$0
2005A EPS	NA
2006A EPS	NA
2007E EPS	NA
FCF	NA
Valuation	
EV/Sales	NA
EV/EBITDA	NA
P/EPS (2007E)	NA
Sentiment	
FC Rating (1= Buy, 5=Sell)	
# of Analysts Covering Co	
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	3/0

Source: Factset & JPMorgan.
Note: Earnings estimates and rating as per First Call.

XsunX Inc. (XSNX/Not Covered/$0.46)

Company Description

XsunX Inc. ("XSNX"), formerly known as Sun River Mining Inc., is a development stage company that was incorporated in 1997. XSNX focuses its research and product development efforts on scalable manufacturing processes and equipment for the company's thin film solar technologies. The company believes that their designs, employing thickness of 0.2 microns to 0.15 microns, would provide a cost effective solution to more expensive silicon wafer technology that employ about 400 microns of thickness. XSNS' efforts are focused on scalable manufacturing processes and equipment for the company's thin film solar technologies , and proprietary designs in Building Integrated Photovoltaics.

Figure 128: Management Profile

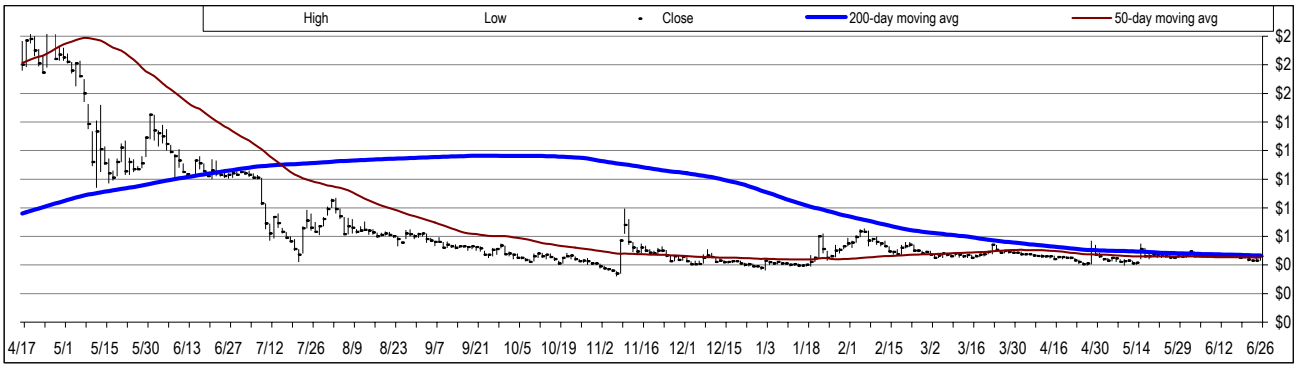
Title	Name	# of Yrs with Company	Previous Employer
CEO	Tom M. Djokovich	5 Yrs	Accesspoint Coporation, CEO
COO	Joseph Grimes	N/A	Envisage Technology

Source: Company reports and JPMorgan.

Recent News and Events

- May 15, 2007— Lambda Energia S.A. de V.C., a company pursuing manufacturing opportunities in renewable energy, entered into agreements with XsunX for the delivery by XsunX of 25 mega-watts of thin film photovoltaic production equipment, valued at over $41 million U.S. Dollars.
- July 18, 2005 — secured a total of $10.9 million in financing from Cornell Capital Partners LP.

Figure 129: XSunX Inc. — Price Performance



Source: Factset and JPMorgan.

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Company Stats:	
Technology Concentration	Wind
Financial Stats:	
Shares Outstanding	29,249
Share Price	$40.19
Market Cap.	$1,177
Debt	$20
Cash	$15
Enterprise Value	$1,171
Sales LTM	$92
2005A EPS	($1.56)
2006A EPS	$0.32
2007E EPS	$0.95
FCF	($41)
Valuation	
EV/Sales	10.0x
EV/EBITDA	NM
P/EPS (2007E)	42.3x
Sentiment	
FC Rating (1= Buy, 5=Sell)	2
# of Analysts Covering Co	5
Technicals	
Avg. Traded Vol (52-Wks)	61
52-Week High/Low	45/1

Source: Factset & JPMorgan.

Note: Earnings estimates and rating as per First Call.

Zoltek Inc. (ZOLT/Not Covered/$40.19)

Company Description

Zoltek Inc, founded in 1975, is an applied technology and materials company that focuses on carbon fibers – materials used in the production of advanced, low-weight wind turbines. The company's strategy is to produce carbon fiber at lower cost, and use this cost advantage to widen the market for carbon fibers. In specific, the company targets applications in wind energy, offshore oil and gas development and recovery, automobile exteriors, and insulation applications.

In 2005, the company benefited from an increase in demand from aircraft brake and wind turbine manufacturers. The company believes that in 2006 and 2007, 50% of its carbon fiber capacity will go towards supplying wind turbine manufacturers. During 2005, the US accounted for 39% of total revenues.

Figure 130: Management Profile

Title	Name	# of Yrs with Company	Previous Employer
Chairman, CEO and President	Zsolt Rumy	N/A	N/A
CFO	Kevin Schott	N/A	Independent Consultant

Source: Company reports and JPMorgan.

Recent News and Events

- June 12, 2007 — concluded a long-term strategic supply agreement with DeWind Incorporated and DeWind Ltd of Luebeck. The expected sales volume is over US $30 million for the first three years of the contract.
- May 22, 2007 — concluded a new expanded long-term strategic supply agreement with Vestas Wind Systems AS, of Denmark, the world's largest producer of wind turbine generators.
- October 24, 2006 — received an additional $7.5 million of funding today under the previously announced existing convertible debt and warrant facility of up to $60 million with institutional investors.

Figure 131: Zoltek Inc. — Price Performance

Source: Factset and JPMorgan.

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Appendix I: Public companies not Included in the Alternative Energy Portfolio

In this section of the report, we provide investors a list of companies that we believe would fit into the Alternative Energy portfolio if the following limiting factors were adjusted: daily trading volume, market cap range, and % of revenues expected from alternative energy sources.

Archer Daniels Midland (ADM/Overweight/$32.76)

Company Description
Archer Daniels Midland is the largest producer of ethanol in the U.S. ADM's current ethanol production capacity of approximately 1 billion gallons. ADM plans to invest heavily in ethanol production, increasing its capacity by an additional 500 million gallons over the next two years.

Bunge Limited (BG/Neutral/$80.42)

Company Description
Bunge Limited is a agribusiness and food company that supplies fertilizer to farmers in South America, originates, transports and processes oilseeds, grains and other agricultural commodities worldwide, produces food products for commercial customers and consumers and supplies raw materials and services to the biofuels industry.

Dyadic International (DIL/Not Covered/$5.30)

Company Description
Dyadic International, Inc. is a global biotechnology company that uses its patented and proprietary technologies (the "Dyadic Platform Technology") to conduct research and development activities for the discovery, development, and manufacture of products and enabling solutions to the bioenergy, industrial enzyme and pharmaceutical industries.

Earth Biofuels (EBOF/Not Covered/$0.19)

Company Description
Earth Biofuels produces and distributes renwable fuels with a focus on biodiesel fuel. EBOF produces pure biodiesel fuel (B100) through the utilization of vegetable oils, such as soy and canola oil as raw material. The company distributes its blended fuel through wholesale distributors, truck stops, and fueling stations.

Global Green Solutions (GGRN/Not Covered/$1.14)

Company Description
Global Green Solutions Inc. is an early stage developer of alternative energy resources and greenhouse gas reduction technologies. With an expanding portfolio of ecotechnology-based products and services, Global Green Solutions hopes to address the challenges of global warming while economically benefiting customers and consumers.

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Orion Ethanol (OEHL/Not Covered/$20.00)

Company Description

Orion Ethanol is a development stage company organized under the laws of Nevada and is in the business of building bio-refineries to produce ethanol and animal feed products.

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Appendix II: Kyoto Protocol

The Kyoto Protocol is an agreement under which industrialized countries will reduce their collective emissions of greenhouse gases by 5.2% compared to the year 1990. The goal is to lower overall emissions from six greenhouse gases - carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, HFCs, and PFCs - calculated as an average over the five-year period of 2008-12. National targets range from 8% reductions for the EU15, 6% for Japan, and permitted increases of 10% for Iceland. The US and Australia have not ratified the Protocol[12].

Kyoto Protocol also includes three market based instruments known as the Kyoto measures.

Clean Development Mechanism (CDM) - Under the CDM, Annex 1 parties (the countries that signed the Kyoto Protocol) may implement emissions reducing projects in non Annex 1 parties (such as, US and Australia) and use the emission reduction credits to meet their own target.

Joint Implementation (JI) - Under the JI, an Annex 1 country may implement a project that decreases emissions or increases their removal by carbon sinks (a carbon sink is a reservoir that consumes more carbon than it releases to the atmosphere. Forests and oceans are the main sinks in the world, whereas burning fossil fuels is a "source") in the territory of another Annex 1 party, and offset the resulting Emission Reduction Units (ERUs) against its own target. For example, Japan may find it difficult to either do forestation or develop wind farms on their land due to scarcity of land and may propose to a country like Canada (an Annex 1 country) to develop forests/windfarms in their territory in order to receive emission reduction credits.

International Emissions Trading (IET) - Under International Emissions Trading, an Annex 1 party may transfer some of its assigned amount of units to another Annex 1 entity that finds it difficult to meet its target.

Following the Kyoto protocol and its ratification by several developed countries (with the notable exception of the United States and Australia), targets have been drawn up by signatories towards the achievement of Kyoto commitments. These targets may provide global opportunities to renewable energy/ renewable energy equipment producers, over and above the opportunities available domestically for firms in the United States.

We provide below a short summary of three representative signatories, in order to illustrate the opportunities that Kyoto Protocol's compliance may generate during 2008-2012.

- **Japan:** By 2010. Japan needs to reduce its greenhouse emissions by 6% from 1990 levels. To achieve the target, Japan has created targets for each sector and

[12]Source : UNFCC, http://unfccc.int/essential_background/kyoto_protocol/items/3145.php

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drawn up targets for dissemination of renewable technologies. It has set a target of 2.3mm units of clean energy automobiles, 1mm units of fuel cells for residential sector, and 5.2mm units of heat pumps by 2010[13].

- **European Union:** By 2010, the European Union seeks to achieve its targets by doubling the share of renewable energy as a percentage of Gross Domestic Energy Consumption from 6% at present to 12%. EU has set a target of 1mm PV units (50% of which will be installed domestically, while 50% will be exported to developing countries), 10,000MW of electricity production from large wind farms, and 10,000MW of biomass installations. It also requires permits for the release of greenhouse gases by utilities and large industrials installations. It also requires permits for the release of greenhouse gases by utilities and large industrial installations.
- **Canada:** By 2012, Canada has a target to reduce emissions by 6% from the 1990 levels. Canada's budget for 2005 announced $1.8 billion to be invested in the next 15 years to quadruple wind generation capacity to 4,000MW, and create renewable power production incentives to develop other renewable sources including solar, small hydro, and biomass.

On June 14, 2007, the officials from 28 nations agreed that the UN's climate conference scheduled for December 2007 should address the timetable for replacing the Kyoto agreement. This event should drive more attention to the alternative energy space and the news flow is likely to impact stocks in this industry.

[13] "Japan On The Move", presentation by Japan's Minister of Environment , http://www.env.go.jp/earth/cop/cop11/climate_c.pdf

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