



## **2006 Q1 Quarterly Report: WilderHill Index Clean Energy Index. March 31, 2006**

The First Quarter of 2006 opened with the Index (ECO) at 172.97, and it ended at 227.14. Q1 thus had a positive return of 31.3%. As expected in tracking the volatile clean energy sector, the Index too reflected sizable volatility during this period.

### **Noteworthy Events in 2006 Q1**

A remarkable event starting with the very beginning of 2006 was to see the Index (ECO) coincidentally, yet interestingly close up each day well into the month; thus its first close down didn't come until January 20<sup>th</sup>. Thereafter, there were only two more days ECO closed down in the month. While the Index began January at 173, it ended then at 219, for an unusual one-month performance of +26%. Although such a volatile January might have prompted some declines in February or March, the Q1 nonetheless closed +31%.

We'd emphasize in the strongest terms this Monthly & Quarterly performance of the Index isn't sustainable; it's unlikely to be repeated soon. Moreover, seeing such a one-sided volatility to upside-only and starting from the very first trading day of 2006 was in part a mathematical coincidence, and one spotlighted by the start of a new calendar year. Because it follows after the 2005 Q4's strongly downward move of -9.2%, that maybe helped to set the stage for January's 'regression to the mean' up and beyond.

January and 1<sup>st</sup> Quarter results are nonetheless bound to be noticed going forward, since the 'Year-to-Date' is such a universal way of measuring performance. To be sure, such a one-sided volatility is something that we'd earlier observed at times in the predecessor WilderHill Index as well (it began calculating in 1999 albeit not then on Wall Street); however as we always emphasize, dramatic downturns must be expected and the Index also declines sharply. Volatility in short is still part and parcel of clean energy stocks.

On the other hand, this non-negligible, 'indefatigable January' was grounded in real causes. Consider that the January data can be nicely explained by very elegant rotation of leadership in ECO, as different stocks were performing well at differing times. Initially it was specifically the solar stocks that turned in a distinguishing performance, the first few weeks of January. Solar pure-plays SunTech Power (STP), Evergreen Solar (ESLR), and SunPower (SPWR) moved upwards at such smart pace, they 'dragged' ECO upwards – even on the days when broader markets or sectors in the Index otherwise closed downwards.

Then, right around the time those solar stocks paused their own price-escalation in mid-month, other components within the Index 'took turns' in helping to still move the Index upwards. The result was elegant albeit *de facto*, rotation. Geothermal component Ormat Technologies (ORA) and carbon fiber-producer Zoltek (ZOLT) both happened to turn up as solar slacked off, with news there of new orders coming in for those two firms. (And for ZOLT, increasing share price was a story that would be returned to throughout Q1).

Specific catalysts brought sharp increases among other ECO components too, helping turn the Index upwards around this time. A few were one-off events unlikely to be oft repeated, like an announcement of an offer to buy Index industrial-gases component BOC Group (BOX): that news moved that stock sharply higher late in January. (The offer was rejected as too low, but a follow-up offer later in Q1 was accepted and the purchase of BOC is likely to be consummated in latter 2006). Q1's rotation among ECO sectors in January had a fairly profound impact on the Index and was fascinating to observe.

Later in January, it was the turn of Quantum Fuel Systems (QTWW) as a maker of hydrogen storage systems and integrator for hybrid vehicles. Their stock moved higher on an analyst's upgrade and report of an order from the Defense Department – this followed a long pronounced downward drift of their stock price over the preceding two years. Because Quarterly rebalancings are partly designed to allow stocks coming off of prior lows to have some impact (and conversely re-weights downwards equities that had an abnormally strong one-Quarter's performance), QTWW too helped tug ECO higher.

The last days of January then saw strongly upwards volatility at Pacific Ethanol (PEIX): this company aims to become a West Coast supplier of ethanol. The President on the eve of his State of the Union speech was expected to spotlight ethanol in a new energy initiative; he did, and both PEIX and another Index component MGP Ingredients (MGPI) saw sharp increases in valuation. Widespread reports indicated U.S. car-makers were increasingly interested in ethanol, and in flex-fuel vehicles using E85. Moreover biofuels could help displace fossil fuels domestically while assisting America's farmers, help replace additive MTBE (but with short-term supply bottlenecks), and enhance energy security to boot. In this way, clean energy was drawing support from disparate ends of the political spectrum.

And yet, confounding investors is something stock markets have done throughout history and will always do: thus clean energy stocks broadly declined sharply on February 1<sup>st</sup>, the day after the President's speech – immediately after he'd just highlighted clean energy! Given some anticipation of profit-taking after the President's speech, plus a 26% increase through January 31<sup>st</sup>, that stocks declined on that notable day is understandable. But it was remarkable still and this one-day's unexpected gyration did make some news.

Of keen interest in January were similarities and yet a robust non-correlation as between 1) the WilderHill Clean Energy Index – versus 2) oil/fossil-fuel Indexes during this time. At first and despite the zero overlap as between 'green' stocks in our clean Index (ECO) – and the stocks found in oil Indexes for carbon-laden fossil fuels, both kinds of Indexes increased strongly at the early start of the year. But soon the similarity ended. By late January, the WH Index essentially had 'de-coupled' from other energy Indexes by going higher and more sharply so. ECO showed further variance in February, declining relatively little when oil-and common energy indexes dropped back more considerably.

In February, on the news of ample oil & gas reserves compounded by the warmest January on record (further dampening natural gas demand), oil & gas Indexes showed noticeable declines. Meanwhile, sector rotation within ECO as noted above caused this Index to close February at a still relatively lofty 219, for a virtually unchanged month – while oil & gas Indexes were then mainly dropping. We next provide a chart for individual ECO components showing their share price, market cap, three-month average volume and weightings as of end of February. Non-correlation with fossil-fuel stocks and NASDAQ is more visually evident in a Graph posted below, later in this Report:

WilderHill Clean Energy Index (ECO) at end of February, 2006

<b>Ticker</b>	<b>Name</b>	<b>Price USD*</b>	<b>Market Capitalization USD*</b>	<b>3 Month Avg Monthly Volume*</b>	<b>Index Weight*</b>
ACPW	Active Power Inc.	4.66	228	4,654	2.59%
AMSC	American Superconductor Corp.	10.08	331	6,344	2.46%
APCC	American Power Conversion Corp.	20.40	3,994	30,218	1.86%
APD	Air Products & Chemicals Inc.	64.16	14,266	22,261	1.49%
BLDP	Ballard Power Systems Inc.	6.10	688	12,915	2.95%
BOX	BOC Group PLC	52.90	13,180	575	1.80%
CPST	Capstone Turbine Corp.	3.16	325	83,181	2.18%
CREE	Cree Inc.	29.95	2,281	22,113	2.31%
CY	Cypress Semiconductor Corp.	17.76	2,434	90,882	2.67%
DESC	Distributed Energy Systems Corp.	9.33	343	19,496	2.66%
ELON	Echelon Corp.	8.10	324	2,569	1.92%
EMKR	EMCORE Corp.	7.75	377	15,916	2.14%
ENER	Energy Conversion Devices Inc.	46.85	1,379	40,498	2.83%
ESLR	Evergreen Solar Inc.	15.59	966	64,074	3.22%
FCEL	FuelCell Energy Inc.	11.13	543	15,690	2.56%
HYGS	Hydrogenics Corp.	4.00	367	10,692	2.88%
IDA	IDACORP Inc.	32.94	1,397	5,449	1.73%
IMCO	IMPCO Technologies Inc.	6.26	181	3,167	2.59%
IMGC	Intermagnetics General Corp.	29.42	1,242	7,470	2.68%
IRF	International Rectifier Corp.	37.10	2,629	25,727	2.28%
ITRI	Itron Inc.	59.46	1,479	11,928	2.91%
KYO	Kyocera Corp.	88.69	16,627	1,387	2.59%
MAG	MagneTek Inc.	4.00	116	4,530	2.56%
MDTL	Medis Technologies Ltd.	19.00	526	3,540	2.61%
MGPI	MGP Ingredients Inc.	13.33	214	3,147	1.54%
MKTY	Mechanical Technology Inc.	3.69	114	4,142	2.56%
MXWL	Maxwell Technologies Inc.	18.35	305	2,554	2.70%
ORA	Ormat Technologies Inc.	38.43	1,213	3,697	2.95%
PEIX	Pacific Ethanol Inc.	18.80	539	14,619	2.68%
PLUG	Plug Power Inc.	5.09	436	22,366	1.92%
POWI	Power Integrations Inc.	24.83	734	7,426	2.16%
PX	Praxair Inc.	53.98	17,400	28,090	1.40%
QTWW	Quantum Fuel Systems Technologies	4.53	240	16,887	3.73%
SPI	ScottishPower PLC	40.85	18,868	2,647	1.69%
SPWR	SunPower Corp. (CI A)	43.90	2,626	12,207	3.06%
STP	Suntech Power Holdings Co. Ltd.	37.56	5,540	46,644	3.38%
ULBI	Ultralife Batteries Inc.	12.45	184	3,643	2.22%
UQM	UQM Technologies Inc.	4.04	100	1,539	2.25%
WFR	MEMC Electronic Materials Inc.	33.49	7,375	63,502	3.17%
ZOLT	Zoltek Cos.	17.26	344	7,218	4.15%

\* Data as of February 28, 2006.

For those seeking to create a Model Energy Portfolio, the data seem to indicate the fossil fuels oil, gas and coal alone will no longer fully cover the broadening energy sector. We thus hypothesize that clean energy including conservation, has become more than 'niche': it's arguably now an arena that stands on its own, and helps diversify a Model Portfolio.

An added reason for this useful non-correlation as between ECO and fossil fuel Indexes, is all four additions put into the WilderHill Index at the start of this Quarter - PEIX, SPWR, STP, WFR each moved strongly upwards – and most usefully, all moved for key reasons distinctly tied to clean energy. Because of the strong clean energy nexus, we believe the additions were timely. Of course volatile movement (while upwards in January) in ECO stocks just as easily go the opposite direction (as happened just a tiny bit in March). Clean energy can go 'out of favor' anytime and we expect ECO should then move more sharply downward, fulfilling its mission to “capture and track” movements of clean energy!

We thus repeat as we so often do, this Index is designed to allow for volatility: it can and does 'drop like a rock' and turn sharply negative. Unlike an actively-managed Fund, it is an Index and so we don't seek any defensive positions when the Index appears 'over-valued', nor generally do we change Index composition between rebalancings. Passive Indexing reflects modern portfolio theory, which generally indicates passive Indexing can produce highly notable results over time relative to actively managed funds. We see return as a function of risk; we're mindful Indexing can lend some value by simply assembling a 'basket' and that in turn may help moderate for singularly often-risky stocks.

Also notable is unlike September 2005, when the Index rose sharply on negative news of Hurricane Katrina and the consequential brief spikes in oil prices, January 2006 movement was partly borne of more positive news. These were product orders, growing interest in clean energy, and government actions like at the California PUC as expected and noted in our last Report, all emphasizing growth in renewable energy. On balance going forward those stimuli may be beneficial; of course, a large number of variables on the other hand (there's always 'the other hand') favor sharp Index downturns as well. These include the rich stock valuations, great difficulties in expanding solar, ethanol and wind, etc.

Indeed in March a few solar stocks turned rather sharply downwards, and the PV space was relatively out of favor at that time. News for instance that Evergreen Solar (ESLR) could no longer source specialized granular polysilicon from MEMC Electronic Materials (WFR), led to its stock sharply declining, though analysts were divided on the importance of this set-back, given that ESLR also sources polysilicon from its new EverQ partner, REC of Norway and is experimenting with chunk polysilicon. Plus solar stock SunTech Power (STP) also was trailing downwards, since its very sharp January increases.

At this time, Medis Technology (MDTL) and a few other small fuel cell developers were increasing in valuation, which again meant 'sector rotation' in the WilderHill Index. It helped to raise the Index at a time solar stocks otherwise had downwards pressure. Throughout the fuel cell sector, the question of whether these costly & speculative products will *ever* get to commercially viable numbers is vexing: the entire fuel cell sector as seen now, may never become profitable. Yet a fairly unique technology at MDTL *may, potentially*, allow it to sell fuel cells ahead of PEM, solid oxide, molten carbonate or other approaches. For more, see Commentary 1.0, "Five Types of Fuel Cells" at the bottom of the page: <http://www.wildershires.com/news.php>

In March other stocks were pushing strongly downward too including Distributed Energy (DESC), which also has a very small fuel cell aspect. But there, recently high prices for natural gas relative to for electricity (the 'spark-gap') may have depressed sales of their combined heat and power systems – a situation that can conceivably improve for DESC should natural gas prices decline (as later in Q1)—and the spark spread grow favorable.

Pricey oil often is viewed as a 'bullish signal' for many of the clean energy stocks, since alternative energy is expected to grow relatively more attractive. That might be so at times *for oil*, yet this situation can be a bit more-subtle for natural gas' costs relative to electricity. Here, a gap/convergence between natural gas cost – and costs of electric power may be a bearish signal for certain clean energy stocks – while bullish for other stocks. (And at times, clean energy stocks decline during costly oil, anyway). Should OPEC *defend* a high oil floor at \$50 or more (dear oil, as natural gas came off recent peaks) it will be interesting to see what happens to natural gas costs and the spark spread.

Looking outside the Index, a few noteworthy developments in clean energy merit brief mention. Wind power and its related emerging technologies continue to grow well in the U.S. and Asia-Pacific along with quickening growth of offshore wind too in Europe. And a 150 MW offshore wind farm has even been proposed off Texas, which could be a first for North America. However, a variety of technical problems continue to vex wind power – although as systems mature those continue to be engineered away through better designs. Thorny wind problems at present include severe turbine gearbox faults, insufficient rigidity, under-dimensioning of components by seeking low top head mass, and poor reliability. An interesting development here is vertical axis design that offers some advantages over the horizontal axis that leads to big blade stretching and compaction.

For solar, shortages of polysilicon we'd discussed on our last Report for Q4 continue to overshadow the news, with near-term pricing pressures and constraints on growth the result. Yet poly producers are responding and attention continues to mount for non-crystalline technologies, including thin-film, CIS, and other means to make electricity from the sun with little or no silicon. Nanotechnology is developing for solar, as are the very large-scale efforts for solar concentrating technologies, and for important (although often overlooked) solar thermal. This includes thermocouple devices to harvest electricity from waste/heat. As always, recovering power from waste can be a smart option.

In biofuels, a European bioethanol integrated research project (NILE) was initiated with the aim of expanding liquid transportation fuels from plant-based lignocellulosic biomass. Europe is heavily dependent on foreign, costly sources of oil. They could instead aid their agricultural sector and reduce dependence on foreign oil, if improved enzymes can be found to cheaply break down cellulose like woody stalks, or the waste like in wheat straw, into sugars. New strains of yeast might conceivably cheaply convert the sugars found in biomass, into ethanol. Like growing American interest in biofuels, there's attention in Europe & Asia (notably China). In the U.S., near-term infrastructure constraints in our railroad capacity, in very-fast-ramping ethanol, and in splash blending ethanol into gasoline might lead to some relaxing of tariffs on shipping ethanol into the U.S. An article in *Science*, proposed a U.S. path for biofuels (Volume 311, page 484, 27 January 2006).

In the scientific realm, an article published in *Science* suggested the presently accepted models forecasting sea-level-rise ahead may *potentially*, be unduly low. Of course we'd dearly hope for the contrary given serious global implications 100 years out, but this piece: Julian Dowdeswell, 'The Greenland Ice Sheet and Global Sea-Level Rise', 311, p.963 (17 February) is lately turning scientific attention to the wisdom of the very low priority now given to preventing CO<sub>2</sub> and greenhouse gases. Consider impacts stemming from freshwater flows from Greenland's ice shelf into the North Atlantic, should the Gulf Stream weaken as a result. Those regions warmed by the current could be seriously impacted, let alone the globe: this arguably merits attention of the most serious sort.

The 24 March issue of *Science* had a number of research articles on currently melting glaciers and ancient sea-level rise, indirectly but undoubtedly framing new attention on climate-forcing greenhouse gases. It placed particular attention on melting ice sheets and deep past climate change, pushing back baselines and broadening thinking of how robustly sea level can rise. And a piece on cellulosic ethanol (Jan. 27<sup>th</sup>) pointed to the role biofuels may play, even as scaling difficulties in ramping corn-based ethanol grows thorny. Finally by March's end, the WH Index (ECO) was perhaps a bit surprisingly still 'able to hold onto' sharp January changes in valuation, and closed out Q1 at even a marginally higher level.

### One-year mark for an exchange-traded Fund (PBW) tracking the Index (ECO)

Notably on March 3<sup>rd</sup> the Index (ECO) closed the day at 220.54. Rounding the figure off to 221 means the Index was up 33% for the year-on-year since March 3<sup>rd</sup> of 2005, when it opened at 166. This March 3<sup>rd</sup> is notable, because it was on March 3, 2005, one year ago, that an exchange traded fund ('ETF') first began tracking ECO live on Wall Street (symbol PBW). That fund is the "PowerShares WilderHill Clean Energy Portfolio" (PBW), and information on the traded fund is at: <http://www.powershares.com/pbwfund.asp>

Parenthetically, anyone interested in those historical data for the WilderHill Clean Energy Index (ECO) going back in intervals up to 60 months can find it at:

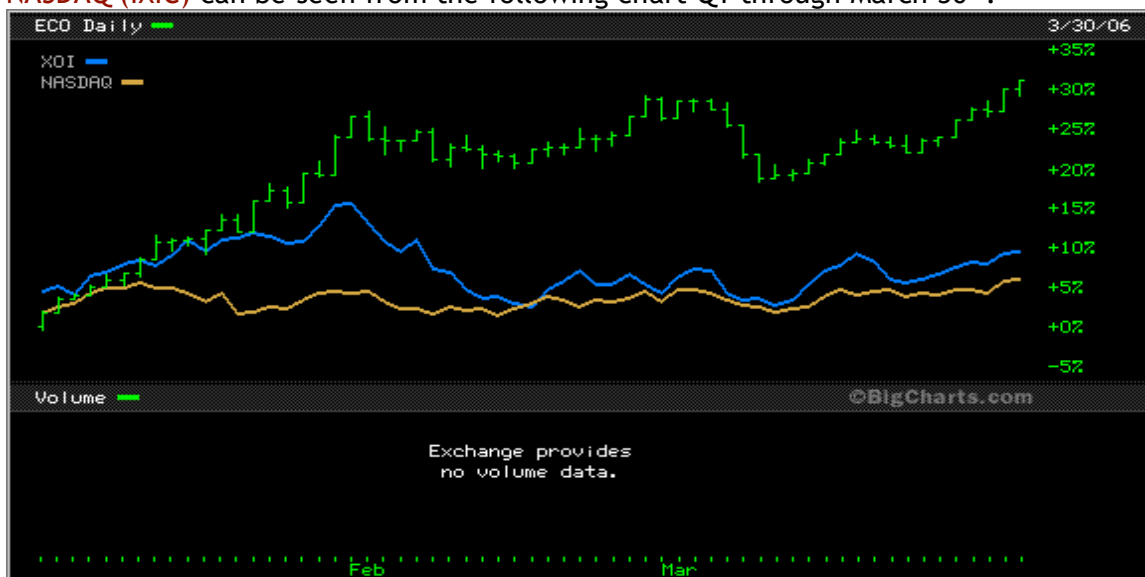
[http://www.amex.com/?href=/othProd/prodInf/OpPiIndMain.jsp?Product\\_Symbol=ECO](http://www.amex.com/?href=/othProd/prodInf/OpPiIndMain.jsp?Product_Symbol=ECO)

For data on the fund (PBW) from PowerShares tracking the Index as an ETF, see

[http://www.amex.com/?href=/etf/prodInf/EtPiOverview.jsp?Product\\_Symbol=PBW](http://www.amex.com/?href=/etf/prodInf/EtPiOverview.jsp?Product_Symbol=PBW) (Tear sheet).

### Graph of Q1 for the Index (ECO) -- vs. the Oil Index and the NASDAQ

Being deeply rooted in renewable energy, this Index (ECO) doesn't have oil companies. Its January climb, but then useful subsequent Q1 non-correlation as between the **WilderHill Clean Energy Index (ECO)** – versus the **AMEX Oil Index (XOI)**, plus the technology-laden **NASDAQ (IXIC)** can be seen from the following chart Q1 through March 30<sup>th</sup>:



## No Changes to the Index (ECO) for the Q2 Rebalance

There's no change in either the composition or weightings of the WilderHill Clean Energy Index (ECO) for the Q2 rebalance. At times, there will be no additions or subtractions to the Index – which in theory can aid theoretical tax and other efficiencies. However we do continue to monitor a number of candidate stocks for future possible addition, and we monitor existing components for any possible necessary deletion as per Index Rules.

## Creation of the “WilderHill New Energy Global Innovation Index” (NEX)

In a newsworthy event, we're happy to announce that we've partnered with New Energy Finance, based in London, and Josh Landess, to launch the “WilderHill New Energy Global Innovation Index” (NEX). NEX began calculating live on February 1<sup>st</sup> 2006. This is the first *Global* clean energy Index on Wall Street; it reflects too smart 'green energy responses' to climate risk, based upon low-carbon thinking. NEX is comprised of companies worldwide whose technologies and services focus on generation and use of cleaner energy, conservation and efficiency, and advancement of renewable energy. [http://www.amex.com/?href=/othProd/prodInf/OpPilndMain.jsp?Product\\_Symbol=NEX](http://www.amex.com/?href=/othProd/prodInf/OpPilndMain.jsp?Product_Symbol=NEX)

Unlike ECO which has some overseas exposure but where all stocks are traded in U.S. markets – the NEX has mostly stocks outside the U.S. and around the globe, that are working in clean and innovative energy. No more than 49% of stocks in NEX can generally be listed on U.S. exchanges – so it's different from ECO. Helpfully, there's useful non-correlation indeed between ECO and the NEX. They're each carefully designed and do different things as complimentary Indexes; they also have differing styles for weighting and as to what might be allowed into each Index. Our aim as always is to remain the leader in clean energy Indexing, and this new partnership extends it into global markets.

NEX is successor to a “Global Energy Innovation Index” (GEIX) that had been launched by New Energy Finance in January of 2005. While the GEIX wasn't calculated formally on Wall Street, now with the robust NEX indeed live on Wall Street, we're delighted to together offer this first and leading *Global* index for new energy solutions. We'll be posting more information as news develops, and hope to have key announcements in the latter 2006. In the meantime, a Press Release on NEX is appended at the end of this Index (ECO) Report.

## Ongoing Website Development


Our website <http://www.wildershires.com> is in continuous refinement and we monitor for glitches, as the website develops and grows in size. Years of experience posting data on websites taught us that glitches can happen, given the software issues that inevitably arise. It's thus worth repeating the actual WilderHill Clean Energy Index (ECO) is always calculated independently and totally apart from our website, by the American Stock Exchange. And of course, the exchange traded fund (PBW) that's tracking the Index is calculated in a robust fashion too totally independently of our own website. Data on the Index (ECO), and on the Fund (PBW) can be found at the website of the American Stock Exchange: <http://www.amex.com> Lastly, we continue to upgrade our website, with the aim of robust uptime and to provide ample information: we welcome your suggestions.

## Summary

Q1 had noticeable upside volatility of +31%, but that Monthly & Quarterly performance of the Index isn't sustainable and is unlikely to be repeated soon. The remarkable January and 1<sup>st</sup> Quarter for ECO is nonetheless bound to be noticed going forward, since 'Year-to-Date' is such a universal way of measuring performance. There were no changes for the Q2 rebalancing in Index (ECO) composition, nor changes in weighting. In a major Indexing first, the WilderHill New Energy Global Innovation Index (NEX) of *global* new/clean energy stocks mainly outside the United States launched February 1<sup>st</sup> -- we're pleased to be partnering on that with New Energy Finance of London.

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Sincerely,



Robert Wilder  
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Disclaimer: The following is a reminder from the friendly folks at the WH Index who worry about liability. Performance figures quoted represent past performance only, and are no guarantee of future results. The views expressed here are those of just one of the managers of the WH Index. Views are not meant as investment advice, and should not be considered as predictive in nature. Any descriptions of a holding, applies only as of March 31, 2006. Positions within the Index can and do change thereafter. Discussions of historical performance do not guarantee, and are not indicative of future performance. The Index covers a volatile sector, and thus is volatile too, subject to well above-average changes in valuation.



## Appendix I

Following are Index weightings, at roughly 1 week before Rebalance to start 2006 Q2: after rebalancing, every stock floats according to its share price over a Quarter.

### Index Components as of: 03/24/06

<b>Company Name</b>	<b>Symbol</b>	<b>% Weighting</b>
Zoltek Cos Inc	ZOLT	5.45%
MEMC Electronic Materials	WFR	3.51%
Medis Technologies Ltd	MDTL	3.21%
Ormat Technologies Inc	ORA	3.16%
Ballard Power Systems	BLDP	3.11%
Suntech Power Holdings	STP	3.08%
Evergreen Solar Inc	ESLR	2.91%
Itron Inc	ITRI	2.87%
Emcore Corp	EMKR	2.83%
Hydrogenics Corp	HYGS	2.80%
Quantum Fuel Sys Tech	QTWW	2.79%
Sunpower Corp	SPWR	2.76%
Maxwell Technologies Inc	MXWL	2.75%
Energy Conversion Devices	ENER	2.72%
American Superconductor	AMSC	2.67%
Cypress Semiconductor	CY	2.59%
Pacific Ethanol Inc	PEIX	2.58%
Cree Inc	CREE	2.55%
FuelCell Energy Inc	FCEL	2.54%
Capstone Turbine Corp	CPST	2.54%
International Rectifier	IRF	2.52%
Kyocera Corp Adr	KYO	2.50%
Magnetek Inc	MAG	2.44%
Intermagnetics General	IMGC	2.38%
Uqm Technologies	UQM	2.31%
Active Power Inc	ACPW	2.25%
Power Integrations Inc	POWI	2.20%
Impco Technologies	IMCO	2.16%
Mechanical Technology	MKTY	2.10%
Amer Power Conversion	APCC	2.04%
Ultralife Batteries Inc	ULBI	2.04%
Plug Power Inc	PLUG	1.90%
Echelon Corp	ELON	1.90%
Distributed Energy	DESC	1.89%
Boc Group Ads	BOX	1.85%
MGP Ingredients Inc	MGPI	1.72%
Scottish Power Ads	SPI	1.70%
Idacorp Inc	IDA	1.69%
Air Products & Chem	APD	1.55%
Praxair Inc	PX	1.45%

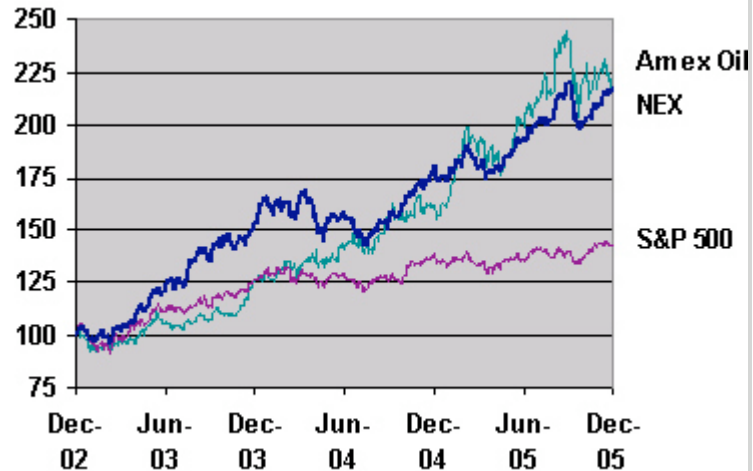
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## Appendix II: a February 2006 Press Release on the new, independent Index (NEX)

### WilderHill New Energy Global Innovation Index (NEX)

The world's leading providers of stock market indexes for the clean energy industry have pooled their efforts to launch the WilderHill New Energy Global Innovation Index.

The new index, which is published under the symbol **NEX**, is comprised of companies worldwide whose technologies and services focus on the generation and use of cleaner



3-year return history of the NEX new energy index. December 30, 2002 = 100. Source: American Stock Exchange LLC; Bloomberg LP.

energy, conservation and efficiency, and advancement of renewable energy.

Included are companies whose lower-carbon approaches are relevant to climate change, and whose technologies help reduce emissions relative to traditional fossil fuel use. This will include companies in wind, solar, biomass & biofuels, small-scale hydro, geothermal, marine and other relevant renewable energy businesses; it also importantly includes companies targeting step-change improvements in generation, distribution and storage of energy, as well as conservation, efficiency, materials, and in the emerging hydrogen and fuel cell sectors, and in associated services.

The NEX is published by WilderHill New Energy Finance LLC, a joint venture between Rob Wilder of WilderShares LLC, Josh Landess of Tucson, Arizona, and New Energy Finance Limited of London. By pooling their efforts, Wilder, Landess and New Energy Finance expect to produce a global index which achieves the following:

- To be widely distributed and accepted as the purest and most authoritative benchmark for the development of the clean energy industry worldwide;
- To attract a high volume of money to track the performance of this emerging sector, without being limited by the liquidity constraints of any individual stocks;
- To enable the creation of a low-cost, transparent, and tax-efficient vehicle for investors seeking to hedge their exposure to other sectors of the energy industry.

Calculation agent is the American Stock Exchange. In back-testing, the NEX has shown a return of 29.3% per annum over the past three years, and 19.3% during the course of 2005.

The NEX went live during January 2006, with 86 constituents trading on 18 markets around the world, divided into nine sectors.

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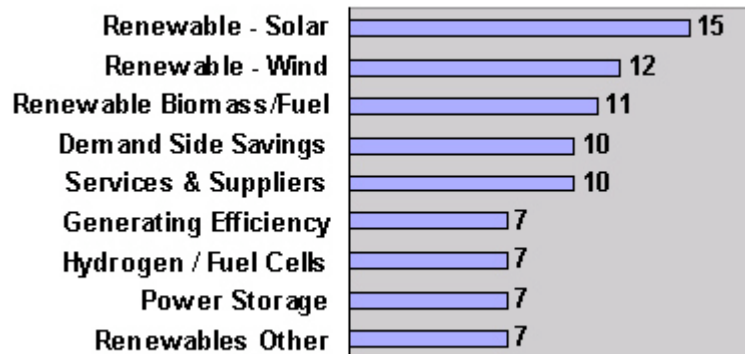
## Index Description

The WilderHill New Energy Global Innovation Index is comprised of companies worldwide whose innovative technologies and services focus on the generation and use of cleaner energy, conservation and efficiency, and advancement of renewable energy in general. Included are companies whose lower-carbon approaches are relevant to climate change, and whose technologies help reduce emissions relative to traditional fossil fuel use.

In the past decade and especially since the Kyoto Protocol, clean energy has seen significant growth outside the United States, with considerable activity now occurring in Europe, the Asia-Pacific region, and elsewhere. To adequately reflect the worldwide nature of the emerging lower-carbon sector, in general at least half of the companies comprising the WilderHill New Energy Global Innovation Index are listed on stock exchanges outside the United States.

There is an Index bias in favour of purer-play companies in renewable energy, and those in cleaner energy generally; thus smaller-cap and mid-cap companies may have a leading role in Index composition. Larger companies with diversified businesses may be included but only when they have meaningful exposure to clean or renewable energy, as determined by a methodology. As new energy technologies are developed, these may be added to the Index when significant to this sector.

The Index is mainly comprised of companies in wind, solar, biomass & biofuels, small-scale hydro, geothermal, marine and other relevant renewable energy businesses; it also importantly includes companies targeting step-change improvements in generation, distribution and storage of energy, as well as conservation, efficiency, materials, and in the emerging hydrogen and fuel cell sectors, and in associated services.



## Constituents Q1 2006

Figure 2. NEX constituents Q1 2006, by sector.

The 86 constituents of the Index at the start of 2006 have an average market capitalisation of \$3.1 billion, and the aggregate market capitalisation of all the constituent companies is \$270 billion.

At the start of 2006 there are 86 constituent companies in the index. The largest sector, by number is Solar, with 15 constituents, followed by Wind, with 12 and Biofuels and Biomass with 11 (see Figure 2).

The 86 constituents of the Index at the start of 2006 are traded on no fewer than 18 different markets around the world (see Figure 3).

The WilderHill New Energy Global Innovation Index will be rebalanced each quarter by the addition of new qualifying companies and the removal of companies that no longer qualify.

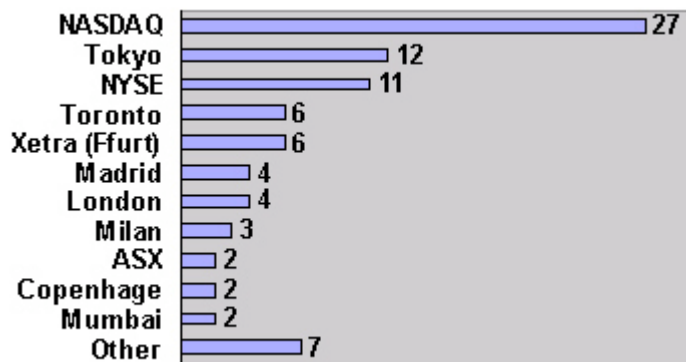


Figure 3. NEX constituents Q1 2006, by stock market.

## Historic Performance

The NEX has undergone rigorous back-testing by the American Stock Exchange, who will be the calculation agent for the new index (see Figure 4).

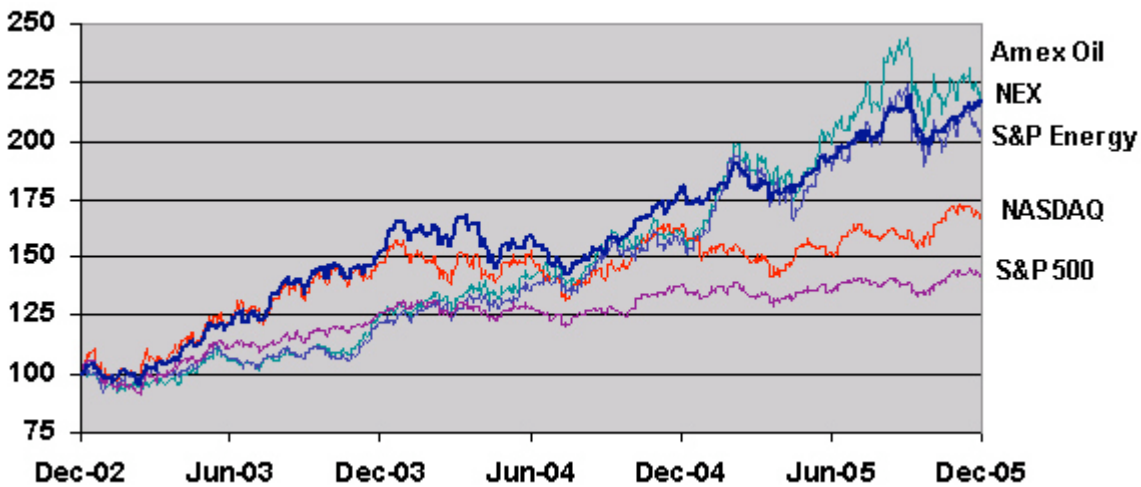


Figure 4. Three-year return history of the NEX against various other indices (rebased, Dec 30, 2002=100).

Source: American Stock Exchange LLC; Bloomberg LP.

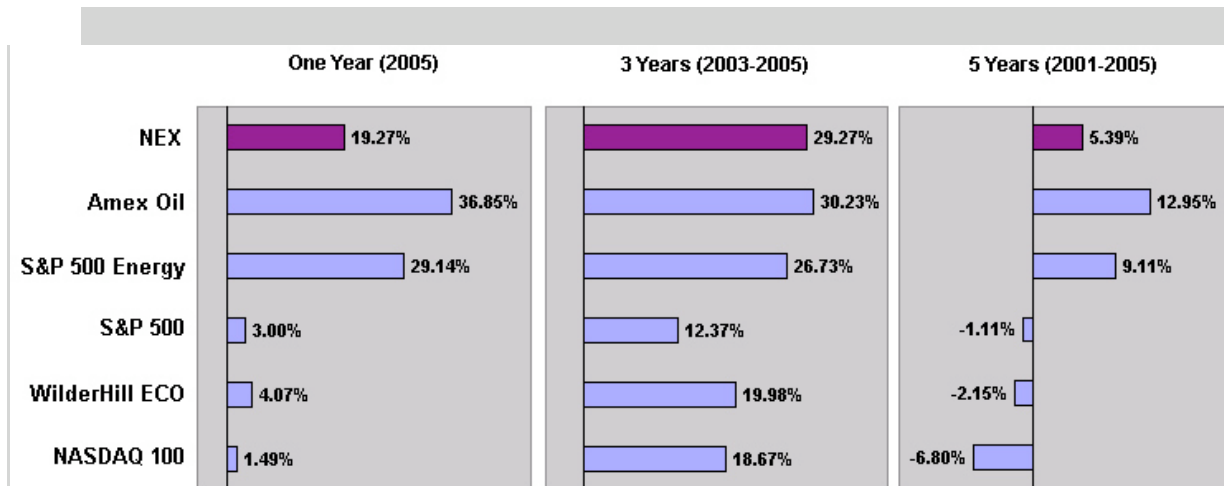


Figure 5. One, three and five-year returns: NEX compared with selected other indexes.  
Source: American Stock Exchange LLC; Bloomberg LP.

In back-testing, the NEX showed a return of 19.27% over the course of 2005, with average compound returns over three years averaging 29.27% (see Figure 5).

Correlations in daily returns between the NEX and various other indices have also been tested (see Figure 6).

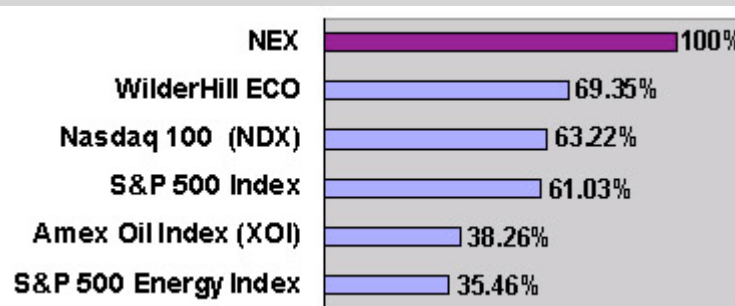


Figure 6. Correlation of daily returns: NEX compared with selected other indices, measured over past three years.  
Source: American Stock Exchange LLC; Bloomberg LP.

## About the Index Provider – WilderHill New Energy Finance, LLC.

- WilderShares LLC has been publishing the WilderHill Clean Energy Index of US-traded stocks (ECO) since August 2004. In March 2005, the PowerShares WilderHill Clean Energy Portfolio (PBW) was launched as an Exchange Traded Fund to track it, and one year later, in March 2006 it had over \$400 million USD under management. WilderShares LLC is based in Encinitas, CA, and its founder, Dr. Rob Wilder is a frequent TV and media commentator on the clean energy sector in the USA.
- Josh Landess is an experienced clean energy equity researcher who was one of the designers of the ECO index and plays a leading role in its management.
- New Energy Finance is a specialist provider of financial information and associated services to investors in clean energy, based in London. It began publishing its Global Energy Innovation Index (GEIX) – the world’s first global clean energy market index – at the beginning of 2005. The GEIX is an informational benchmark, tracking the market

performance of the world's 50 largest pure-play clean energy technology companies every two weeks. By the end of 2005 it was up 28.3% on the year. New Energy Finance draws on an international staff of analysts and researchers, and in September 2005 the company was named Euromoney / Ernst & Young Renewable Energy Information Provider of the Year.

## Governance

The Index will be managed by the Index Provider, WilderHill New Energy Finance, LLC with input from the following two bodies:

- An Advisory Board, made up of prominent individuals from the worlds of finance, climate science, technology, politics and communications;
- A Stock Selection Committee, made up of individuals with knowledge of companies and markets that make up the clean energy industry.

Research into North American companies will be led by the US-based members of WilderHill New Energy Finance LLC; research into international companies will be led by New Energy Finance Limited in London.

## Appendix I – Sector Definitions

At launch, the Index will be made up of companies active in the following nine sectors:

### 1. Renewables - Wind

Wind is the renewable technology that has had the biggest impact on our energy usage patterns over the past decade. The next decade will see continued activity, particularly in developing countries and offshore. The Wind sector includes components and subassemblies for wind turbines, as well as manufacturers of turbines themselves. A big part of this sector, however, consists of the developers, generators, utilities and engineering firms that have sprung up to exploit opportunities to build wind farms around the world.

### 2. Renewables - Solar

The Solar sector covers all technologies that capture energy directly from the sun, either using a photovoltaic (PV) material, or via solar thermal technologies such as concentrators or Stirling engines. The solar energy sector is already substantial - cost reductions through new technologies or through increased manufacturing scale should see it breaking into new areas of energy demand over the coming decades.

### 3. Renewables - Biofuels, Biomass & Waste-to-Energy

Liquid transportation fuels including biodiesel and bioethanol can be derived from a range of biomass sources, including sugar cane, rapeseed/canola, soybeans or cellulose. The Index will not include companies whose only involvement is as a grower of biofuel feed-stocks, but will cover suppliers of processing technologies and equipment, through logistics and distribution players, to manufacturers of energy systems specially adapted for the use of biofuels and products. The Index may also include companies involved in

the production and consumption of solid and gaseous fuels derived from biomass. Solid biomass for the energy sector can include a number of specially-grown crops, such as elephant grass or coppiced willow, but it can also consist of crop residues such as straw. We include in this sector processors of other waste matter for energy generation, such as sewage waste, chemical by-products or biogas produced from municipal waste, as their exploitation often involves the same technologies as grown-for-purpose biomass.

#### **4. Renewables - Other**

One of the characteristics of the clean energy industry is that it is based on the exploitation of a diverse range of renewable energy sources. This sector covers companies that are active in renewable categories other than the main ones of wind, solar and biofuels/biomass.

Marine Energy covers all technologies relating to extraction of energy from the sea. Possibilities include waves and tide, either via tidal barrages or tidal flow generators. We also categorise companies looking at run-of-river energy solutions as part of the Marine sector.

Geothermal power has long played a part in the energy mix of countries with obvious geothermal resources, such as Iceland and Japan. Geothermal energy can, however, play an increasing role worldwide. New drilling techniques allow users to tap into resources formerly too deep to access, and new ways of extracting useful power from lower-temperature geothermal fields allow use of resources that could not have been used economically in the past. Low-temperature geothermal heat can be used to reduce the cost of heating residential and commercial buildings.

Hydroelectric power is seeing a new lease of life as part of the world's shift to cleaner energy solutions. There is controversy about the sustainability of large-scale hydroelectric power projects, but there are interesting developments in small-scale and low-head hydro, and even micro-scale, and the latter small and micro-hydro technologies are generally preferred for this Index.

#### **5. Hydrogen & Fuel Cells**

The hydrogen sector covers everything from the production and storage of hydrogen to its distribution, as well as the various technologies and applications in which it can be used. Hydrogen is not, of course, a renewable fuel source per se - it is only a carrier of energy, in the same way electricity is not a source but a carrier of power. But if produced renewably, hydrogen looks like a promising candidate to replace fossil fuels in transport and other applications in the longer term.

Many observers believe that hydrogen and fuel cells will eventually lie at the heart of a post-fossil-fuel energy architecture. Although fuel cells have been around for over 150 years and their performance is not in doubt, their high manufacturing costs and low reliability mean that they have yet to capture any mass markets – and it is not certain that they will ever do so. A number of companies and research initiatives are hoping to change that over the coming years.

#### **6. Power Storage**

Many renewable energy and emerging energy technologies are either intermittent, or have response curves that are unable to follow the dynamic demands that are put on them

when deployed. Batteries and other energy storage technologies may therefore become key enablers for any shift to these technologies. We include here mechanical technologies like flywheels and components like ultra-capacitors, which are straight potential replacements for batteries, but not hydrogen-based storage solutions, which would be classified under Hydrogen & Fuel Cells.

#### **7. Generation Efficiency & Smart Distribution**

Companies in this sector, although they may not be focused directly on renewable energy, are working to deliver step-change improvements in efficiency of the existing generation and distribution systems. Important technologies include software to improve electricity demand management or reduce grid losses, as well as breakthroughs in motor or generator design. This sector would also include technologies for combined heat and power (i.e. those which enable the capture and use of waste heat from power generation).

#### **8. Demand-Side Energy Saving**

Demand-side energy-saving technologies are highly relevant to investors in the renewable and low-carbon energy field. Shifts towards renewable energy sources over the coming 20 years must be accompanied by wholesale improvements in energy efficiency. We include in this sector technologies that reduce the use of energy in homes, retail and commercial buildings. These may include building components that reduce energy use, intelligent systems for managing power consumption and technologies that more efficiently use power.

#### **9. Services & Suppliers**

The development, deployment and financing of clean energy solutions will drive the creation of an entire industry of service providers and suppliers. Companies in this sector may provide resource forecasting services, consultancy, contract research and development, materials, components, marketing, financial or other services.

\* \* \*

Note: Nuclear power is not considered clean energy for the purpose of this Index. This is as much in recognition of the differing industry structure and drivers of the nuclear industry as it is ideological. A minor involvement in the nuclear industry will not, of itself, disqualify a company from inclusion.

## **Appendix II – Index Construction**

The rules for the construction of the index are as follows:

- (1) The Index will be quoted in dollars. Some of the underlying equities being non-dollar denominated, the Index will bear an element of currency exposure.
- (2) The Index uses a double-modified equal-weighting methodology. The modifications consist of (i) weighting by sector, to ensure an appropriate representation across different technologies and business models within the clean energy industry; and (ii) separation into two market capitalisation bands within each sector, to reflect the mix of larger and smaller companies in the sector.
- (3) Sector weightings will be set at the sole discretion of the Index Provider and updated from time to time. Weightings will take into account the relative scale of



- the sectors; judgment regarding sectors which are over- or under-represented among quoted companies; and smoothing, so that weightings do not change too rapidly over time. The Index Provider will also take into account the need to achieve an appropriate international balance to reflect the industry as a whole.
- (4) No single stock may exceed 5% of the total Index weight after each quarterly rebalancing.
  - (5) For a stock to be included in the selection universe, the company must be identified as one that has a meaningful exposure to clean energy, either as a technology, equipment, service or finance provider, such that profitable growth of the industry can be expected to have a positive impact on that company's performance. Generally, meaningful exposure is taken to mean that the company derives at least 10% of its market value from activities in clean energy, in the judgment of the Index Provider.
  - (6) The Index will not include the stocks of funds investing in quoted equities, as these can themselves qualify for direct inclusion in the Index. The Index may, however, include the stocks of companies or funds whose main activity is investing in or holding portfolios of renewable energy generating capacity or other infrastructure, as long as they meet the other criteria for inclusion. It may also include companies or quoted funds that invest in privately-held equity of qualifying companies.
  - (7) Stocks in the Index will generally meet the following criteria relating to liquidity:
    - They will have three-month average market capitalization of at least \$150 million. Market capitalization for a majority of Index stocks is typically \$250 million and above. To account for the notable but smaller companies sometimes significant to the clean energy field, a minority of Index stocks may have market capitalizations between \$150 million and \$250 million.
    - They will be listed on a major international or national exchange: the NYSE, AMEX or NASDAQ in the USA; in Europe one of the major exchanges such as London, Paris (Euronext), Madrid, Frankfurt (Xetra) or Copenhagen; in Asia these may include, but not be limited to the Australian Stock Exchange (ASX), Tokyo, Hong Kong, Shanghai, Shenzhen, Mumbai and the National Stock Exchange of India;
    - They will reach minimum average daily liquidity requirements for sufficient trade volume.
- A small number of Index constituents may at any time not meet these criteria.
- (8) The Index Provider will have complete discretion over which companies are included in the Index, their weightings, and the definitions and weightings of the sectors.
  - (9) The Index will be calculated by the American Stock Exchange, acting as qualified calculation agent, who will be responsible for the gathering and processing of all market prices, exchange rates and other data.
  - (10) The Index is based on a value of 100.00 at 30 December 2002.

## Appendix III: Constituents, Q1 2006

	Bloomberg ticker	Component Name	Index Sector	Primary Exchange
1	AVA US Equity	Avista Corp	DS	New York
2	CESV US Equity	China Energy Savings Technology Inc	DS	NASDAQ N-Mkt
3	CREE US Equity	Cree Inc	DS	NASDAQ N-Mkt
4	ELON US Equity	Echelon Corp	DS	NASDAQ N-Mkt
5	IRF US Equity	International Rectifier Corp	DS	New York
6	ITRI US Equity	Itron Inc	DS	NASDAQ N-Mkt
7	LLTC US Equity	Linear Technology Corp	DS	NASDAQ N-Mkt
8	POWI US Equity	Power Integrations Inc	DS	NASDAQ N-Mkt
9	PWER US Equity	Power-One Inc	DS	NASDAQ N-Mkt
10	P CN Equity	Railpower Technologies Corp	DS	Toronto
11	AMSC US Equity	American Superconductor Corp	GE	NASDAQ N-Mkt
12	BEZ US Equity	Baldor Electric Co	GE	New York
13	CPST US Equity	Capstone Turbine Corp	GE	NASDAQ N-Mkt
14	1964 JP Equity	Chugai Ro Co Ltd	GE	Tokyo
15	DESC US Equity	Distributed Energy Systems Corp	GE	NASDAQ N-Mkt
16	IMGC US Equity	Intermagnetics General Corp	GE	NASDAQ N-Mkt
17	OXIG LN Equity	Oxford Instruments Plc	GE	London
18	BLD CN Equity	Ballard Power Systems Inc	HF	Toronto
19	6361 JP Equity	Ebara Corp	HF	Tokyo
20	FCEL US Equity	FuelCell Energy Inc	HF	NASDAQ N-Mkt
21	HYG CN Equity	Hydrogenics Corp	HF	Toronto
22	JMAT LN Equity	Johnson Matthey PLC	HF	London
23	MDTL US Equity	Medis Technologies Ltd	HF	NASDAQ N-Mkt
24	PLUG US Equity	Plug Power Inc	HF	NASDAQ N-Mkt
25	ACPW US Equity	Active Power Inc	PS	NASDAQ N-Mkt
26	1211 HK Equity	Byd Co Ltd	PS	Hong Kong
27	6674 JP Equity	GS Yuasa Corp	PS	Tokyo
28	MXWL US Equity	Maxwell Technologies Inc	PS	NASDAQ N-Mkt
29	SAFT FP Equity	Saft Groupe SA	PS	EN Paris
30	6764 JP Equity	Sanyo Electric Co Ltd	PS	Tokyo
31	ULBI US Equity	Ultralife Batteries Inc	PS	NASDAQ N-Mkt
32	ABG SM Equity	Abengoa SA	RB	Madrid
33	ACT IM Equity	Actelios SpA	RB	Milan
34	ADM US Equity	Archer-Daniels-Midland Co	RB	New York
35	CSAN3 BZ Equity	Cosan SA Industria e Comercio	RB	Sao Paulo
36	ENE AU Equity	Energy Developments Ltd	RB	ASX
37	ENR IM Equity	EnerTAD SpA	RB	Milan
38	HER IM Equity	Hera SpA	RB	Milan
39	MXG CN Equity	Maxim Power Corp	RB	Toronto
40	MGPI US Equity	MGP Ingredients Inc	RB	NASDAQ N-Mkt
41	NZYM DC Equity	Novozymes A/S	RB	Copenhagen
42	PEIX US Equity	Pacific Ethanol Inc	RB	NASDAQ N-Mkt
43	BHEL IN Equity	Bharat Heavy Electricals	RO	Mumbai
44	KHD CN Equity	Canadian Hydro Developers Inc	RO	Toronto
45	CEN NZ Equity	Contact Energy Ltd	RO	NZX
46	FUM1V FH Equity	Fortum Oyj	RO	Helsinki
47	ORMT IT Equity	Ormat Industries	RO	Tel Aviv
48	PCG US Equity	PG&E Corp	RO	New York

49	PSD US Equity	Puget Energy Inc	RO	New York
50	AFCO US Equity	Applied Films Corp	RS	NASDAQ N-Mkt
51	ATA CN Equity	ATS Automation Tooling Systems Inc	RS	Toronto
52	CGY GR Equity	Conergy AG	RS	Xetra (Frankfurt)
53	EMKR US Equity	Emcore Corp	RS	NASDAQ N-Mkt
54	ENER US Equity	Energy Conversion Devices Inc	RS	NASDAQ N-Mkt
55	ES6 GR Equity	Ersol Solar Energy AG	RS	Xetra (Frankfurt)
56	ESLR US Equity	Evergreen Solar Inc	RS	NASDAQ N-Mkt
57	6971 JP Equity	Kyocera Corp	RS	Tokyo
58	6508 JP Equity	Meidensha Corp	RS	Tokyo
59	WFR US Equity	MEMC Electronic Materials Inc	RS	New York
60	QCE GR Equity	Q-Cells AG	RS	Xetra (Frankfurt)
61	6753 JP Equity	Sharp Corp	RS	Tokyo
62	SWV GR Equity	Solarworld AG	RS	Xetra (Frankfurt)
63	SPWR Equity	Sunpower Corp	RS	NASDAQ N-Mkt
64	STP Equity	Suntech Power Holdings Co Ltd	RS	New York
65	ANA SM Equity	Acciona SA	RW	Madrid
66	BBW AU Equity	Babcock & Brown Wind Partners	RW	ASX
67	FPL US Equity	FPL Group Inc	RW	New York
68	GAM SM Equity	Gamesa Corp Tecnologica SA	RW	Madrid
69	IBE SM Equity	Iberdrola SA	RW	Madrid
70	8002 JP Equity	Marubeni Corp	RW	Tokyo
71	NDX1 GR Equity	Nordex AG	RW	Xetra (Frankfurt)
72	SSE LN Equity	Scottish & Southern Energy PLC	RW	London
73	SUEL IN Equity	Suzlon Energy Ltd	RW	Mumbai
74	3403 JP Equity	Toho Tenax Co Ltd	RW	Tokyo
75	6363 JP Equity	Torishima Pump Manufacturing Co Ltd	RW	Tokyo
76	VWS DC Equity	Vestas Wind Systems A/S	RW	Copenhagen
77	AGC LN Equity	AgCert International	SS	London
78	7259 JP Equity	Aisin Seiki Co Ltd	SS	Tokyo
79	ENTG US Equity	Entegris Inc	SS	NASDAQ N-Mkt
80	GTI US Equity	GrafTech International Ltd	SS	New York
81	TINY US Equity	Harris & Harris Group Inc	SS	NASDAQ N-Mkt
82	HXL US Equity	Hexcel Corp	SS	New York
83	4204 JP Equity	Sekisui Chemical Co Ltd	SS	Tokyo
84	SGL GR Equity	SGL Carbon AG	SS	Xetra (Frankfurt)
85	UMI BB Equity	Umicore	SS	EN Brussels
86	ZOLT US Equity	Zoltek Cos Inc	SS	NASDAQ N-Mkt

### Key

DS	Demand-Side Energy Saving
GE	Generation Efficiency & Smart Distribution
HF	Hydrogen & Fuel Cells
PS	Power Storage
RB	Renewables - Biofuels, Biomass & Waste-to-Energy
RO	Renewables - Other
RS	Renewable - Solar
RW	Renewable - Wind
SS	Services & Suppliers