



## 2005 Q3 Quarterly Report: WilderHill Index Clean Energy Index. September 30, 2005

Q3 opened with the Index at 156.5, and it ended at 188.9. Q3 thus had a positive return of 20.7%. As expected, in tracking a volatile sector, ECO reflected sizable volatility.

### Notable Events: CPST

A timely confluence of \*a Stock's Regression to the Mean – with \*the Quarterly Index Rebalancing will on occasion produce a pretty notable story, and Capstone Turbine (CPST) was such an interesting story for ECO in Q3. Over the first half of this year, Capstone's share price had undergone significant declines. As noted in our last Report, it was trending towards a \$1.00/share Quarterly average 'floor', beneath which CPST would then have to be removed, according to WilderHill Clean Energy Index Rules.

Indeed, one broad issue we'd faced for the last Rebalance was whether a stock should be removed 'prematurely', because its share price had fallen to below \$1.00 – but where it's not yet below the \$1.00/share floor as averaged over an entire Quarter. However, because CPST continued to be relevant to the Index's core mission due to its clean energy relevance, we let 'the Rules take care of matters.' CPST was left in; it would be removed only at a Rebalance if it fell below \$1.00 for a full three-month average period. More pertinent to us, were our concerns that their microturbines may use 'brownier' fuels than we mainly seek for Index technologies; on the other hand, flex-fueled turbines can use cleaner fuels, and anyway are relatively efficient.

Hence for the Q3 Rebalance, Capstone's stock began the Quarter at just \$1.35/share. Meanwhile, they were reset to a normal 2.7% weight in the Energy Conversion Sector. Soon thereafter, CPST stock began moving up towards its broad prior trading range. Gains in valuation may have been due to diverse factors such as follow-on sales at CPST, federal energy Bill, analysts' upgrades, longevity reports on extant units, or something else entirely. Whatever the reason(s), in a single Quarter and so less than in three months, CPST was trading near \$5/share, roughly a four-fold increase from the start of Q3. That swift change in value (plus 2.7% starting weight) led to CPST briefly reaching a notable 9% Index weight in Q3, and so unsurprisingly, it impacted Index performance in this Quarter. On the other hand, we take note that CPST shares once traded at around \$100/share in the internet bubble of 2000. So it's a bit difficult to identify the 'mean' when one speaks of suggested regression, and this notion of regression is likely best spoken of with caution, and benefit of hindsight.

CPST soon dropped somewhat, not surprisingly, yet it stayed fairly elevated unto Quarter's end and so played a mentionable role in Q3. Looking ahead, the converse holds too: declines in a stock once it is 'outweighted' can have significant downward impacts on the Index, if that happens in the same Quarter that a rise occurs. CPST briefly achieved 9% weight, then dropped to around 6%, and at Quarter's end was reset to 2.7%. After rebalance, down (or up) movements at CPST have relatively less impact. Each Index stock floats over every Quarter with its weight set by share price: CPST may (or may not) reach such a sizable weighting again in the future.

## Mitigating for Single-Stock risk

Having so many small and risky stocks heightens Index volatility. It also reflects that these are often unproven technologies; some firms in ECO (fuel cells, superconductors, etc) may never bring viable products to market: there's an inefficiency in pricing these equities. But, we'd received a great many requests for an Indexing instrument over years of work on the antecedent (more volatile & narrow H2 Fuel Cell) Index, and felt confident that an Index tracking the genuine clean energy was sought. We thus embraced inevitable volatility, because that's part and parcel of this emerging sector.

Fundamentally, Indexing is based upon a basket of stocks, and that simple fact can perhaps offer some helpful mitigation of sizable single-stock risk. Hence while one or more stocks in the Index might swing 10% or 20%+ downwards (or up) in a single day, and this often happens – the Index is itself relatively less dynamic in one trading day. The WilderHill Clean Energy Index will be exceptionally volatile over time and likely see dramatic short or long declines (or increases), but compared to single stocks themselves comprising ECO, there's some degree of mitigation of volatility, and that's arguably notable when viewing return as a function of risk.

Because the WilderHill Clean Energy Index closed up a bit sizably for Q3, it may misleadingly engender belief that there's now less risk premium here. This would be incorrect. There's ongoing substantial risk in this emerging sector, and we believe there's always non-negligible risk of very significant downturns here – especially after any run-up. While a 'basket of stocks' may dampen single-stock risk somewhat, it does not eliminate it. Recent Index ECO movements in Q3 (upside, and then down) embody the fact that dynamism is common here and that can go in either direction.

Mitigating single-stock risk was briefly highlighted in our last WilderHill Index (ECO) Quarterly Report, in context of two superconductor stocks. It applies as well to solar: one solar stock in the ECO back-testing history is Astropower (APWR). A few years ago, prospects for APWR seemed sunny; it was a part of a growing solar PV industry, their PV panels were sold in home improvement stores, and one might be hard-pressed to favor ESLR, for instance, over APWR then. Since that time, APWR has collapsed, while ESLR grew many-fold and provided investors with favorable returns. A misplaced bet on APWR would have had far different ramifications than a bet on ESLR, as an example where a basket of stocks (in solar) might help mitigate for single-stock risk.

More than a few of the many small cap, clean energy stocks in this Index may stumble, or someday go out of business. An Indexing approach can help address the risk (though the universe of stocks in superconductors, and solar is small indeed). This is balanced by the fact that only a small portion of increases in a single-stock may be captured.

In sum, even a stock or Index with strong recent upside movement presents risk. To see a single equity rise so quickly that it briefly reaches a 9% Index weight, means it has gone up many-fold, but that weight is not an unalloyed 'good. It also may proffer an unhelpful imbalance; for instance, should the same stock also soon sharply decline in the same Quarter; it could as noted have initially amplified effect on the Index overall. An arguably useful aspect of the WilderHill Clean Energy Index, is as a basket of stocks it may potentially help mitigate single-stock risk in a volatile sector: but that benefit is limited by the many risks always still facing any Index here.

## The 3% Rebalancing Cap: A Design of Index (ECO) Rules

Some of our Rules were purposely designed, by us, to helpfully restrict discretion: 2 ways that we've 'handcuffed ourselves' are \*the modified equal-weighting method, and \*3% ceiling on individual stocks at rebalance. The rationale merits a brief review.

From the start, our experience indexing for clean energy had usefully taught us important early lessons when designing this Index (ECO). Given the choice whether this new Index should weight stocks by market-capitalization (producing a wide range of weights) – or should have a more equal-weighted design, we clearly felt the latter would work better here. To be sure, a market-cap style is used well when Indexing mature sectors and that approach gives large stocks a far more important role. It makes some stocks far more significant than others, based on their market cap. One or two stocks might re-balance at 10% or more weight, others together less than 1%. For subscribers to efficient-market theory who hold ample data are priced into shares, market-cap may be a good arbiter of value. But with small pure-play clean energy stocks thus having so little impact, we saw market-cap as too vexing for ECO.

Our experience Indexing clean energy had persuasively shown us that to most robustly track genuine Clean Energy stocks in this sector, we needed to include the pure-play, and so volatile, small-cap stocks. Small-caps can be key here. Since often young tech companies are still in research, may lack revenues or commercial products, they can have market caps well under \$500 million. To avoid seminal small stocks 'fighting against' large-caps, we needed a (modified) equal-weighted approach for ECO.

Within that design, we'd also need the large companies with significant clean energy exposure and relevance (like KYO), since those have some value for Indexing here: indeed, several are in ECO now. Yet we recognized that while those large companies are diversified out of clean energy and their stocks are relatively stable or track major Indexes (Beta), a robust Clean Energy Index should truly reflect sharper movements – down or up – that characterize this emerging sector. Unlike Indexes for more mature fossil fuels, where a cap-weighting means two very large-cap stocks could make up 30%+ of an Index – and relatively small stocks together are only 1% – the design of ECO helps ensure volatile clean energy pure-plays are not 'swamped by large caps'.

In sum, we determined a modified equal-weight design was most appropriate for this Index (ECO). A strict equal-weighted methodology arguably could have been used, except we were seeking to be intellectually robust by initially weighting the first Index according to Sector. Also, we felt that for this first Index in clean energy, we should be able to emphasize the cleaner, more relevant Sectors, over the less so.

Lastly, the 3% cap helps to 'hand-cuff' us, by preventing distortions in weightings or favoritism at the rebalance: it also reinforces an aim of passive Indexing which is to avoid more active management (frequent stock turnover, or 'stock picking'). A 3% cap helps ensure too we don't fall below a floor of at least 34 stocks in the Index. As the number of stocks in ECO grows, this Rule helps enforce that no stock is weighted very much more than any other stock at the rebalance. Having these constraints on our own discretion helps, in our opinion, to instill discipline; it also promotes straight-forward thinking, and transparency that's key to the WilderHill Clean Energy Index.

## Hurricane Katrina, Hurricane Rita, and Stocks in Distributed Generation

When horrific Hurricane Katrina hit U.S. Gulf Coast States on August 29, it brought terrible human suffering (our hearts go out to all those impacted). It also brought a renewed focus on oil vulnerability, plus the price spikes in gasoline since our Gulf is a bottleneck for U.S. fossil fuel refining and production. Some ECO stocks in distributed generation (DG) climbed on Monday, and remained elevated all that week as notable alternatives. Capstone (CPST) and Distributed Energy (DESC) rose, anticipating perhaps re-construction in areas hit by Katrina – but also due to national energy impacts that \$70/barrel oil may have. That price makes renewable energy comparatively desirable.

A few days before, we'd noted similarities between performance of ECO, and the key oil Indexes (which all rose in anticipation of the storm). But sharp dissimilarities soon came afterwards between the performance of the then fast-rising WilderHill Index (ECO) – and stagnating broader markets in the storm's aftermath. Broader markets were barely up for the week: the NASDAQ closed up about 1%. By contrast, the WilderHill Clean Energy Index rose about 8.2% for that week, to close at 184.7.

Following that terrible storm, the NASDAQ and other Indexes stayed mainly unchanged for days; meanwhile, oil prices rose sharply and briefly touched \$70/barrel: that's a psychologically notable level. As several energy technology stocks within ECO rose, some very strongly, a roughly 7% gap was created in the course of that week between the performance of ECO – and NASDAQ. This is non-negligible divergence.

Interestingly, only some Index (ECO) component stocks that rose following Katrina, now have commercial DG products immediately for sale today. Fuel cell stocks, for instance, are oft still in the R&D phases, and among the most speculative components of the Index. There's arguably a very sizable risk they'll fail to ever to be profitable, and short term, they simply don't have commercial products in quantities that 'fill the need' which power disruptions caused by Katrina/Rita presented in very real ways.

So while several many other stocks in the Index are based on proven technologies (wind, power metering, microturbines, etc) and have diverse uses that potentially can offer relief following Katrina, others still like in fuel cell research have exquisitely few products to sell today. A rise in the latter types of stocks, if mainly in response to Hurricanes Katrina and Rita may be due part to some uncertain speculation that they *might* in the future have viable commercial products. An Index simply tracks that.

Clean energy products & DG may be used to help rebuild some communities, and that accounts for some run-up. Nationally too, implications of oil touching \$70/barrel, even briefly, can open minds to new ways of thinking about alternatives. Together, high oil prices + Katrina attracted fresh interest in clean energy over the following weeks.

Near the end of the Q3, Hurricane Rita next hit the Gulf, exacerbating this vexing oil situation and that may have impacts still to play out in Q4 for ECO. That said for ECO stocks to rise so swiftly after Katrina – the Index 'jumped' from 163 the Monday before Katrina hit – to a high around 195 just three weeks later (up about 20%) is not a sustainable trend. The Index may certainly well decline, or 'regress to the mean' in Q4 following such large move upwards in so brief a time. On the other hand, some of any regression to come was perhaps already seen late in Q3, with declines then.

## The One-Year Performance Since ECO Inception on August 16, 2004

WilderHill Clean Energy Index began calculating live August 16, 2004, at a value of 125.0 (more precisely, 124.99), and closed on August 16, 2005 at 163.4, for a one-year performance of +30.7%. A few comments are suggested by this first-year record. One is that risk and return go hand-in-hand: it may be the substantial risks across this sector that's so dominated by small-cap stocks that can engender such dynamism. As we oft highlight, the Index doesn't attempt to mitigate volatility – for instance, the Index doesn't take defensive positions, nor include large-caps with less exposure to clean energy simply because those could 'smooth out' performance. Significant movements in ECO are expected, over time, and this can surely be sharply downwards (or up).

Further, the Index by coincidence, began live calculations at a relative low-point, according to back-testing historical data. This contributed too, to Year 1 performance. As this Index goes on calculating for years to come, we look forward to amassing an increasingly data-rich environment, and seeing ECO serve as the leading tool that's recognized as a robust reflection of this emerging sector. Being steeped in clean energy and in Indexing, we look forward to remaining the Clean Energy Index leader for a field which we believe can potentially grow with some vigor.

## No Addition, Deletions, or Changes in ECO for 2005 Q4

At times, we anticipate there will be no Index changes at Quarterly Rebalance, and there are in fact no changes to the Index for the 2005 Q4. Passive management is a natural part of Indexing, and it lends to tax efficiency. We're mindful of several stocks fast approaching good candidacy for the WilderHill Index, and we'll follow these for possible 2006 Q1 additions. As always, we welcome your thoughts and suggestions.

It's expected that numerous new stocks will continue to appear due to healthy growth across clean energy, and in some Quarters, ECO may markedly enlarge with several stocks added. As a brief indication of growth recently in clean energy, we're posting below a chart indicating trends just within fast-growing solar PV MW production (chart adopted from Maycock, Renewable Energy World, July/Aug. 2005, p. 86):

### **Top PV cell/module producers (production in MWp-DC)**

<b>Company</b>	<b>2002</b>	<b>Rank</b>	<b>2003</b>	<b>Rank</b>	<b>2004</b>	<b>Rank</b>
Sharp	123	1	198	1	324	1
Kyocera	60	3	72	3	105	2
BP Solar	73	2	70	4	85	3
Mitsubishi	24	9	40	6	75	4/5
Q-Cells	--	--	--	--	75	4/5
Shell Solar	57	4	73	2	72	6
Sanyo	35	5	35	8	65	7
Schott Solar	29	7	42	5	63	8
Isofoton	27	8	35	7	53	9
Motech	--	--	--	--	35	10
Suntech	--	--	--	--	28	11/12
Deutsche Cell	--	--	17	11	28	11/12
General Electric	29	6	17	11	25	13

## Ongoing Website Development

We continue to monitor closely for glitches in our website that is under continuous development for the Index: [www.wildershires.com](http://www.wildershires.com) and [www.wilderhill.com](http://www.wilderhill.com) - since glitches are expected, given the unexpected issues that typically arise in developing a site. It's important to note, however, that the Index (ECO) is always calculated in a very robust fashion and apart from the website by the American Stock Exchange. Also, the ETF tracking product for the Index is calculated in robust fashion by AMEX, and it too is independent of our developing website. One issue that arose late in Q3 was the closing price was missing one day within a database used for displaying percentage change on our website, resulting in a greater percentage change figure the next day, than the correct information found at our AMEX partner's site:

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

## Summary

In sum, one stock had rather outsized impacts on the WilderHill Clean Energy Index during 2005 Q3, and those impacts concluded with the rebalance. Hurricanes Katrina and then Rita brought considerable new attention to fragility of the U.S. fossil fuel infrastructure, along with oil price spikes, and heightened interest in clean energy alternatives. There were some notable increases in Index valuations intra-Quarter, followed by some arguable 'regression to the mean' the last two weeks. Energy supply concerns at the end of the Quarter may perhaps influence oil prices again, in Q4. Lastly, we continue to upgrade our website at wildershires.com with an aim of robust uptime, and to provide ample data and information: we welcome your suggestions.

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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 they should not be considered as predictive in nature. Any favorable or unfavorable descriptions of a holding, applies only as of September 30, 2005. 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 it is volatile too, subject to above-average changes in valuation.*

## Appendix

*Following are Index weightings, roughly 3 weeks before Rebalance for 2005 Q4: after rebalance, every stock floats according to its share price over a Quarter.*

### **Index Components as of: 09/09/05**

<b>Company Name</b>	<b>Symbol</b>	<b>% Weighting</b>
Capstone Turbine	CPST	9.18%
Distributed Energy Sys	DESC	3.93%
Energy Conv Devices	ENER	3.82%
Impco Technologies	IMCO	3.74%
Uqm Technologies	UQM	3.35%
Magnetek Inc	MAG	3.30%
Ormat Technologies Inc	ORA	3.30%
Emcore Corp	EMKR	3.24%
Echelon Corp	ELON	3.10%
Cypress Semiconductor	CY	3.03%
Amer Superconductor	AMSC	2.97%
Evergreen Solar	ESLR	2.95%
Maxwell Technologies	MXWL	2.95%
Ballard Power Systems	BLDP	2.90%
Mechanical Technology	MKTY	2.65%
Amer Power Conversion	APCC	2.59%
Active Power	ACPW	2.55%
Hydrogenics Corp	HYGS	2.54%
Itron Inc	ITRI	2.48%
International Rectifier	IRF	2.43%
Fuelcell Energy	FCEL	2.41%
Power Integrations	POWI	2.41%
Intermagnetics Genl	IMGC	2.38%
Cree Inc	CREE	2.28%
Kyocera Corp ADR	KYO	2.28%
Plug Power	PLUG	2.13%
Mgp Ingredients	MGPI	2.10%
Medis Technologies	MDTL	2.04%
Zoltek Co	ZOLT	2.03%
Ultralife Batteries	ULBI	1.98%
Boc Group Ads	BOX	1.96%
Praxair Inc	PX	1.89%
Quantum Fuel Sys Tech	QTWW	1.88%
Scottish Power Ads	SPI	1.86%
Air Products & Chem	APD	1.67%
Idacorp Inc	IDA	1.66%