



Venture Capital for Developing New Energy Technologies

**Richard T. Stuebi
President, NextWave Energy
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The restructuring of the global electric power industry will offer many opportunities for inventors and entrepreneurs to create and capture value. History has shown repeatedly that deregulation of an industry spawns technological innovations that new entrants are in the best position to introduce.

Of course, these new entrants require capital to grow and succeed. And, even with adequate capital, many early-stage companies fail, as they must navigate numerous degrees of technical, market and execution risks in order to survive until they can thrive.

This basic principle – that new ventures are risky but can offer huge rewards if they can reach viable maturity – is the underlying premise for the so-called “venture capital” (VC) community.

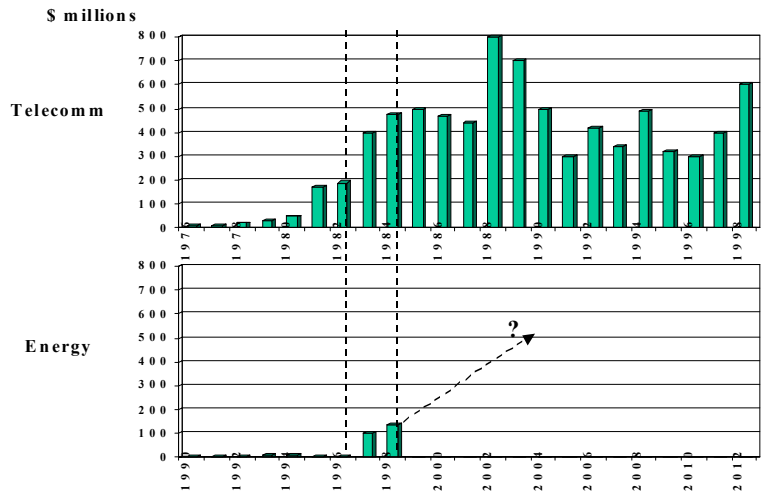
It is no secret that the influence of VC financing has increased phenomenally in the past 20 years, reflecting its enabling role at the root of the meteoric rise and expansion of the most famous companies in the high technology sectors. As a result of the incredible returns generated from these legendary successes, the amount of money seeking to be placed in new ventures to produce comparably attractive returns has never been greater.

These two trends – deregulation of the electric industry and the bountiful growth of the VC community – are converging in an important way. The amount of VC money directed towards new energy opportunities is increasing rapidly, as VC managers recognize the parallels between where the electricity sector stands today and where the telecommunications industry stood fifteen years previously. Since VC investments in telecommunications ventures created significant wealth, there is the reasonable expectation that increased VC emphasis on the even-larger electric power industry will be fertile ground for excellent financial returns, and money is now pouring into new energy ventures (Fig. 1).



Figure 1

INCREASING VC INVESTMENT ACTIVITY



Source: Venture Economics, Stanford Graduate School of Business, Nth Power Technologies, Inc.

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In the past few years, a number of VC funds have been formed to focus specifically on investment opportunities in the energy sector, including (among others) Nth Power Technologies, EnerTech Capital Partners, Power Ventures, GFI Energy Ventures and Arete Ventures. These energy-focussed VC funds are in addition to corporate venture funds managed within large energy companies such as Enron, PG&E, Hydro-Quebec, and Exelon (formerly known as PECO).

The increase in VC activity in the electric power sector is only just beginning, as followers begin to take note of the emerging successes of leaders in the field. Contrary to conventional wisdom, the VC industry is not risk-seeking, but instead is somewhat risk-averse: the VC community likes to see a few pioneering success stories actually emerge before committing huge resources to a particular area. Without examples from within the sector of profitable “exits” – typically through initial public offerings (IPOs) – by which VC investors can regain liquidity on their earlier investments, VC financiers tend to be quite shy about making path-breaking investments.

Fortunately for energy entrepreneurs and inventors, market receptivity to recent IPO’s of energy-related ventures has been very favorable (Fig. 2), which can only enhance the upward trend of future VC involvement in subsequent early-stage energy technology investment opportunities.



Figure 2
RECENT U.S. ENERGY IPO'S

<u>Company</u>	<u>IPO date</u>	<u>Equity price</u>		<u>Appreciation CAGR</u>
		<u>At IPO</u>	<u>7/21/2000</u>	
Fuel Cell Energy	1Q 1997	\$6	\$69	100%
Astro Power	1Q 1998	\$7	\$25	66%
Plug Power	4Q 1999	\$16	\$58	457%
Caminus	1Q 2000	\$22	\$19	----
Capstone	3Q 2000	\$16	\$57	~ ∞

Source: Yahoo! Finance, NextWave Energy analysis

These developments have not gone unnoticed by Wall Street analysts:

- **Hugh Holman of Roberston Stephens:** “We believe now is the time to be bullish on energy technology.”
- **Joe Arsenio of Chase Hambrecht & Quist:** “The underlying drivers behind new energy technologies are genuine and sustainable.”
- **Robert Winters of Bear Stearns:** “There’s clearly an enormous market potential for many of these [energy technology] companies to succeed.”
- **Greg Haas and Frederick Schultz of Raymond James:** “We see a distinct group of high growth firms emerging to provide innovative services and breakthrough technologies to a \$250 billion deregulating electric industry.”
- **Sam Brothwell, Christine Farkas & Steve Fleishman of Merrill Lynch:** “We view the techno-revolution of energy as a big, open-ended opportunity – one very much akin to fiber optic and wireless in telecommunications.”
- **Namrita Kapur of Adams Harkness & Hill:** “I believe that [emerging energy technologies] will be the next page of the New Economy.”

Reflecting these factors, VC funding should therefore become increasingly available for companies that are developing new energy technologies.

Of course, this is very good news for inventors and entrepreneurs dedicated to unleash their innovation in the fertile ground of the electricity sector. That said, in seeking VC support, it is essential for entrepreneurs and inventors in the energy sector to fully

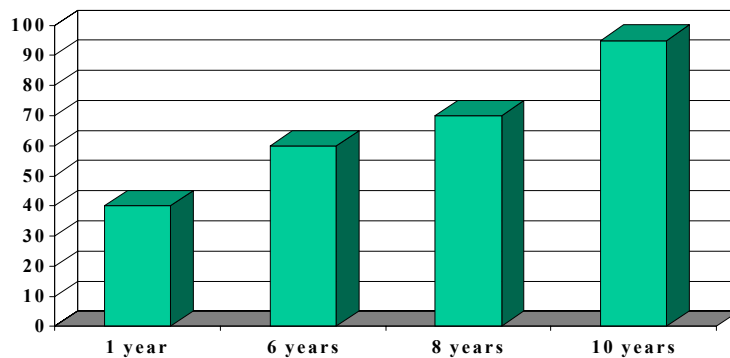
understand the implications of the basic premise underlying the VC marketplace: high reward, high risk.

Simply put, for every venture that succeeds, many others end up worth nothing. The unpleasant truth is that most new ventures fail (Fig. 3).

Figure 3

FAILURE RATE OF NEW VENTURES

Percent



Source: U.S. Department of Commerce, New Jersey Institute of Technology

In recognition of this risk-reward tradeoff, VC fund managers invest in a portfolio of ventures, all of which they strongly believe will succeed. This is because even the most insightful analysis can never fully predict which ventures will ultimately fail rather than succeed.

Like a batter in baseball, VC firms hope to get a “base hit” about 30% of the time, with the occasional “home run”. It is the home runs that must offset the strikeouts – the investments in failed ventures that end up worth nothing – to allow the fund as a whole to earn the rates of return that a VC firm’s funding sources demand (Fig. 4).



Figure 4

TYPICAL VC PORTFOLIO

	#	Invested \$ m m	Return multiple	Year 5 value \$ m m	Return CAGR
“Dogs”	3	\$3.0	0 x	\$0.0	NA
“Walking Dead”	4	\$4.0	2 x	\$8.0	15%
“Cash Cows”	2	\$2.0	5 x	\$10.0	38%
“Home Runs”	1	\$1.0	10 x	\$10.0	58%
TOTAL	10	\$10.0	3 x	\$28.0	23%

Source: Venture Capital Online

So VC managers must feel that every investment they make has the potential to become a home run -- knowing full well that not all of them will be, for factors that cannot be foreseen in advance. While VC firms understand that they are inevitably assuming considerable risks, they will only do so in areas that they can gauge and accept based on informed judgment. In contrast, VC firms cannot tolerate an investment opportunity that presents enormous risks on multiple dimensions simultaneously. If too many risks are present, or equivalently, if too many things must go right for an investment to become a home run, VC managers simply will decide not to invest, and will turn to the next deal.

This is the context that entrepreneurs and inventors in the energy arena must innately understand. For if new ventures are to receive the capital that they require, they must be able to tell a very good story to VC firms, in their language and covering the issues critical to them. In short, the story must be convincing in portraying a case that a home run on this investment opportunity is highly probable.

Regrettably, and perhaps a reflection of the grim statistics on new venture failures in general, many emerging energy ventures are not positioned properly to attract the early-stage equity necessary for long-term success. To the VC reader, they just do not appear to be home runs. These ventures are typically mispositioned in at least one of the following three ways:

- **Misguided strategies.** While it is admittedly difficult for new technologies to penetrate the marketplace, it is rarely wise to unduly rely on government support – either R&D programs, incentives/subsidies to customers, or outright market mandates – to overcome marketplace acceptance obstacles when building a venture. Numerous historical examples reveal how fragile this approach can be: a change in government (or in government policy), and the “supported” market disappears from underneath the venture. VC firms will not allow themselves to get sucked into this dependency

trap, and will not finance companies that are determined to follow this path. Another warning sign to a VC reader: a “me-too” strategy in which the venture follows a business approach being pursued by a competitor, but without any compelling ability to offer a clear differentiating advantage. Without a basis to assess why the venture can successfully dislodge the entrenched competitor with a lead in the marketplace, such a plan is destined for VC rejection.

- **Implausible analyses.** Many business plans from early-stage ventures contain “hockey stick” projections, in which a few years of bleak financial prospects are followed by suddenly (miraculously?) much more favorable results. On top of this, such analyses often lack explicit assumptions on pricing and market share, or are based on pure conjecture without any validation from the actual marketplace. (A commonplace statement: “All we need is 5% of this emerging market to make these projections!”) When reviewing analyses of this type that lack adequate rigor, a VC firm will seriously question the credibility of the venture on any of its claims -- and generally will be unable to become comfortable with making an investment.
- **Excessive technical orientation.** Management teams comprised solely of technical people (engineers and scientists) – especially with long academic pedigrees – will experience great difficulty in receiving VC funding. This is because technical managers tend to have great difficulty with the imprecisions that are rife within commercial enterprise – the soft sciences of marketing and sales, the subtleties of interpersonal relationships, the uncertainties implicitly accounted for by modern option-based management principles. Even with respect to product development, where technical superiority is crucial, business suffers as technicians fall prey to the old adage “perfect is the enemy of the good enough”, by spending far too long and too much money in trying to build and offer the ultimate widget.

For one or more of the above reasons, many of the energy ventures currently in the market for funding have gotten – and will likely continue to get – rejected by VC firms. Perhaps there is the kernel of a winning story in their venture, but with the above-noted “warning flags” waving, it is certainly difficult for VC managers to conclude that a home run is likely to happen.

So, how does an emerging energy venture convince VC firms that Mark McGwire is stepping to the plate, ready to crush a home run? While VC managers examine many factors, four primary attributes quickly separate high-potential ventures from also-rans:

- **Huge, growing, real market.** The venture must offer a product or service that has a clearly identifiable market. For obvious reasons, it is preferable that the market be very large (multiple billions of dollars per year) and growing at a healthy pace (10+% per year). Furthermore, there should be a demonstrated willingness by “real”



consumers to fully pay for the product or service in question: the “customer” should not be the government (or be subsidized by the government), and customers should not have to be notified of the existence of the product or service before buying it.

- **Compelling business model.** As a result of many successful ventures in the Internet and e-commerce arena, VC managers now desire an approach to business that generates so-called “recurring revenue streams”. In short, they prefer businesses that involve ongoing customer relationships with dependable cash flows, as opposed to being overly dependent upon large one-time customer purchases that leads to significant financial volatility. Furthermore, VC firms want to see how a venture will defend itself against competitors and develop an impregnable sustainable advantage – for instance, through patents.
- **Attractive, realistic financials.** Of course, VC firms understand that financial projections are somewhat of a guessing game, biased inevitably on the optimistic side. That said, they want to see that the proforma forecasts have logically supportable assumptions, and do not result in implausible revenue and profit projections. Furthermore, VC funds tend not to invest in ventures led by unreasonable entrepreneurs who prematurely ascribe excessive valuations to their firms, therein dimming ongoing capital formation prospects.
- **Strong management team.** Probably more than any other issue, VC fund managers review the caliber of the senior management team in making investment decisions. It is virtually axiomatic that VC firms “bet on jockeys, not on horses”: management has a greater executional impact (either way) on a venture’s future than any other factor. Strong management will aggressively drive the firm, cultivating urgency throughout the organization, as time is money for VC investors with funds locked up in the venture until an exit is successfully achieved. The management team should include deep commercial orientation and business acumen – especially in finance and marketing -- preferably provided by professionals with demonstrated prior successes in building winning ventures in a related field. As Hugh Holman of Robertson Stephens notes: “One reason we take a more optimistic view toward the future of energy technology is that we see a new breed of entrepreneur appearing in the power industry – the financial, versus the techie, entrepreneur.”

To create the impression of an imminent home run when raising VC funding, it is therefore imperative that entrepreneurs and inventors who are leading emerging energy technology companies establish a strong business orientation with these key attributes from the outset.

To do so, leaders of emerging energy technology ventures must:



- **Focus relentlessly on the market.** While technology development is undoubtedly important, it is more crucial to incessantly seek answers from the marketplace to questions that are central to the venture's future ongoing success, such as:
 - Who are the best customers to seek?
 - What does this type of customer really want?
 - How much will he/she pay?
 - Who is serving these customers now?
 - How can we best reach and serve these customers, and beat our competitors?
- **Develop a sound business plan.** The plan must be based on a focussed strategy (to prevent dissipation of scarce resources), and founded on customer-based market opportunities and capability advantages unique to the venture, to enable investors to gain confidence in the venture's long-term viability. In addition, the financials incorporated in the business plan should be supportable by market findings, consistent with the organizational development needs of the venture, and reasonable to the financier.
- **Get the best talent.** A good idea is nice; good execution is essential. And good execution only comes with strong performers, starting at the top. By extension, management and key staff must be provided appropriate financial incentives (i.e., significant equity positions and option potential) to attract and retain them, especially given today's extremely competitive labor markets.

Energy technology entrepreneurs and inventors that adhere to these three imperatives stand a very good chance of being able to raise the venture capital that will allow their firms to succeed, thereby being able to bring economic and environmental benefits that the world badly needs.

To get a base hit -- much less a home run -- a batter in baseball requires tools in good working order (batting gloves, cleats, a bat) and sound technique, in addition to innate talent. Similarly, no matter how good the technology or the idea behind a new energy venture, a winning entrepreneur must be well-prepared when facing the VC community.

Like it or not, the VC marketplace holds the key to success – money – for most emerging ventures. It behooves the leaders of start-up companies in the energy field to focus adequate time, attention and resources to obtaining the proper tools and technique to get a base hit – who knows, maybe even a home run.