

Transitioning to Private-Sector Financing: Characteristics of Success

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Preface

Commercialization and successful transfer of technology to the marketplace is difficult. It is complex, nonlinear, and interactive. And, as we will discuss, it is expensive. Obtaining adequate financing is central to successful commercialization. Early financial resources can come from public sources, but the bulk of financing usually comes from the private sector.

Many entrepreneurial companies have difficulty raising private-sector financing, even though they are technically proficient and might have had little difficulty obtaining public-sector sponsorship. As part of the National Renewable Energy's (NREL's) Enterprise Development efforts, NREL is interested in understanding and addressing this problem to increase the rate of commercial successes for clean energy technologies.

There is a long-standing debate over the government's role in the technology commercialization process and a concern that the government not pick "winners and losers." This is an important debate, and we are careful to limit our activities to providing information and bringing together people with mutual interests. In a sense, we are helping entrepreneurs help themselves. We also are committed to good stewardship of the considerable investment that the Department of Energy (DOE), NREL, and other public-sector entities have made in these technologies.

Furthermore, we believe that there is much more substance to the commercialization problems faced by clean energy entrepreneurs than the adage that "these markets don't exist," or that "these technologies need investors with a so-called double bottom-line perspective," where a public good complements making a shorter-term economic profit. We believe that a pragmatic focus on business fundamentals could help many more energy start-ups become successful in the marketplace.

This paper is a working document. Its intent is to provide a basis for further discussions among private-sector financiers, clean energy companies, and public-sector sponsors such as the DOE/NREL. Hopefully, the resulting dialogue can help all the players better leverage each other's resources and capabilities. We would like to thank the numerous individuals who read drafts and provided advice in the course of writing this paper. A special thanks to Jim Robbins of the Environmental Business Cluster and Simon Balint of the Rensselaer Incubator Program for contributing valuable business information to our appendices. We have strived to keep the main part of this report concise, yet self-contained, while providing further explanation in appendices.

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Executive Summary

The purpose of this paper is to help entrepreneurs commercialize clean energy, technology-based products. We hope that by shedding light on the private capital investment process and the characteristics and strategies of entrepreneurs who obtain financing, we can assist and encourage others to do the same.

Entrepreneurs often assume financial hurdles will be significantly lower once they have perfected their technology. Many are surprised to learn about the business requirements that must be addressed – beyond having a great technology – to attract the interest of the venture-capital community. In a classic chicken-and-egg scenario, energy entrepreneurs need private financing to turn their new technology into marketable products; but private financiers often want marketable products and a well-rounded business plan before they risk any funds. How can these hurdles be overcome? What do successful entrepreneurs have in common besides a good technology? We have found that successful clean energy entrepreneurs:

1. Take time to understand and involve the financial community early in the developmental process,
2. Strengthen business fundamentals early in the commercialization process, thereby significantly increasing value in the enterprise, and
3. Are focused and driven by market considerations.

These characteristics do not guarantee success, but they definitely give the entrepreneur an upper hand in attracting private-sector financing. Moreover, the chances are the strongest when firms have all three characteristics; one or two is rarely sufficient. The most successful companies tend to have key managers that develop comprehensive strategies around these areas and are well schooled in making the business a success.

I. Understand and Involve the Financial Community

Successful entrepreneurs educate themselves on the variety of financing options and how to position themselves to obtain funds. Obtaining financing is a “contact sport.” By involving investors early on, the chances of successfully commercializing a technology increase for several reasons.

1. Early involvement builds trust and mutual understanding, which is critical to obtaining financing.
2. Investors will have time to become knowledgeable and comfortable with a new technology and target market.
3. Building financial contacts saves the entrepreneur considerable time during the fund-raising process.
4. And, finally, a referral from a trusted colleague in the financial community may be the most important endorsement an entrepreneur can get during the fund-raising process.

To help the entrepreneur identify and involve the appropriate financial partner(s), corresponding to the stage of their business, we provide a summary description of the major equity financial players in Table S-1. Additional topics discussed include bootstrapping and project finance, which typically involve both debt and equity. We also identify the stages of development for entrepreneurial ventures where the various equity partners typically become involved, along with typical investor requirements and some discussion of investor risk considerations.

Table S-1: Equity Financing Rounds over the Early Life of a Company
(from Roberts, etal. 2000)

Financing Round	Definition	Typical Amounts	Who Typically Plays
Seed	Prove a concept/qualify for start-up capital	\$25K - \$500 K	<ul style="list-style-type: none"> ▪ Founder's Equity ▪ Angels ▪ Early-stage Venture Capitalists
Start-up	Complete product development and initial marketing	\$500K - \$3 M	<ul style="list-style-type: none"> ▪ Angels ▪ Early-stage Venture Capitalists
First	Initiate full-scale manufacturing and sales	\$1.5 M - \$5 M	<ul style="list-style-type: none"> ▪ Venture Capitalists
Second	Working capital for initial business expansion	\$3 M - \$10 M	<ul style="list-style-type: none"> ▪ Venture Capitalists ▪ Private Placement Firms
Third	Expansion capital to achieve break-even	\$5 M - \$30 M	<ul style="list-style-type: none"> ▪ Venture Capitalists ▪ Private Placement Firms
Bridge	Financing to allow company to go public in 6-12 months	\$3 M - \$20M	<ul style="list-style-type: none"> ▪ Mezzanine Financing Firms ▪ Private Placement Firms ▪ Investment Bankers

II. Strengthen Business Fundamentals

Though being familiar with the financial community is an advantage, it is not enough to ensure financing. Building a business that will attract investment means strengthening business fundamentals early by pursuing a parallel path of technology development and enterprise development. Successful entrepreneurs recognize that a strict technical focus in the early phases of development probably will result in a great technology, but great technologies rarely succeed by themselves. However, great businesses using good technologies usually do succeed — and usually get financed. Table S-2 illustrates some of the basic business expectations of the investment community.

Table S-2: Business Fundamentals and Investor Expectations (Murphy, 1999)

People	Product	Strategy	Markets	Financing	Business Plan
Well-rounded and experienced management team	Clearly defined market driven, and patent-protected "product"	Strong market focus, high profitability and technology platforms, which allow for diversification	Technology pull; many identified customers; min. \$100M/yr potential; poised for rapid growth; competition well understood	Use of funds to grow business providing high ROI (40%) and a clear exit strategy (~5 years)	Comprehensive and integrated picture of plan to bring the technology to market

Unfortunately, because of the high cost of technology development, the pressures and constraints of commercialization do not always allow start-up companies to address critical business fundamentals in a timely manner. As a result, many clean energy companies build "uneven" organizations with strong technical skills but weak business skills. This imbalance can keep a company from successfully attracting financing. Although they assume they are ready for seed or start-up financing, in reality, they have not satisfied basic business planning milestones.

Addressing this development imbalance can be daunting, but the rewards are immense. A well-rounded enterprise not only increases the intrinsic value of the business; it lowers the perceived risk, and therefore increases the value to the investor. Hence, to help managers address these business gaps, we discuss the business fundamentals and common gaps that many clean energy entrepreneurial ventures must address. These discussions are based primarily on investor feedback from 14 of NREL's Industry Growth Forums.

III. Moving from a Technology to a Market Focus

Investors are acutely aware that the market is the source of profits. In fact, private-sector investors often use market robustness as a way to indicate the value of a business and to deal with a host of uncertainties and other risks. If the market size is sufficiently large, then errors in financials, such as projected costs and market share, may still allow the venture to be viewed positively by the investors. Thus, successful entrepreneurs are focused on the market. These entrepreneurs rely heavily on market information to design and build a product that customers need and will pay for.

Clean energy entrepreneurs face an added challenge of explaining or defining a market that is just emerging. Such is the case for "*disruptive technologies*," which offer a different value proposition. Many of these new markets must be created and developed, while attempting to sell in to existing markets where the entrenched competition is fierce and may have an unfair market advantage, particularly in the short term.

The entrepreneur must be aware of the impact that perceived over-dependence on public-sector financing could have on investors. Public-sector financing – though quite important and appropriate, early on – can be a double-edge sword that can be easily interpreted by private-sector investors as indicating the venture is not market-focused and/or instead wants to play in the R&D sandbox.

Introduction

The purpose of this paper is to help entrepreneurs commercialize clean energy, technology-based products. By shedding light on the private capital investment process, and the characteristics and strategies of entrepreneurs who successfully obtain private-sector financing for their commercialization efforts, we hope to encourage others to do the same.

As part of our commitment to the development of clean energy technologies and products, the U.S. Department of Energy (DOE) and the National Renewable Energy Laboratory (NREL) have also made large investments in the early-stage development of these technologies. Further, we have worked in close collaboration with the clean energy industry for the past 25 years on R&D, with the expectation that industry would take their technology-based products to the marketplace since the government views commercialization as the responsibility of the private sector.

The financial community's interest in clean energy firms is at an all-time high. In the year 2000, investments in the energy technology sector surged upward – an impressive 134 percent -- before losing some momentum as other technology stocks declined. Despite this impressive success, there are still hundreds of companies with promising technologies finding it difficult to move beyond government programs and to attract financing.

Entrepreneurs often assume financial hurdles will be significantly lower once they have perfected their technology. Many are surprised to learn about the many additional requirements that must be addressed – beyond having a great technology – in order to attract the interest of the venture capital community. In a classic “chicken-and-egg” scenario, energy entrepreneurs need private financing to turn their new technology into marketable products. But private financiers often want to see marketable products and a well-rounded business plan before they risk any funds. How can these hurdles be overcome? What do successful entrepreneurs have in common besides a good technology?

Through discussions¹ with investors, entrepreneurs, clean energy executives, and technology program managers, we have found that entrepreneurs who successfully obtain private-sector financing share three key characteristics. They:

1. Take time to understand and involve the financial community early in the company's developmental process,
2. Strengthen business fundamentals early in the commercialization process, thereby significantly increasing value in the enterprise, and
3. Are focused and driven by market considerations.

These characteristics do not guarantee success, but they give the entrepreneur an upper hand in attracting private-sector financing. Moreover, the chances are the strongest when firms have all three characteristics; one or two is rarely sufficient. The most successful companies tend to have key managers that develop comprehensive strategies around these areas; and are well schooled in making the business a success.

¹ These observations are based largely on experience with entrepreneurs, financiers, and energy executives involved in NREL's Industry Growth Forums and the investigation conducted while forming the National Alliance of Clean Energy Incubators. The Industry Forums have provided a unique window on the status of clean energy businesses seeking private-sector financing. Fourteen forums have been held between 1995-2001, with participation of 150 entrepreneurial presenters and more than 75 investors and senior business executives serving as panelists.

I. Understand and Involve the Financial Community

Successful entrepreneurs educate themselves on the variety of financing options and how to position themselves to obtain funds. Obtaining financing is a “contact sport.” By involving investors early on, the chances of successfully commercializing the technology increase for several reasons.

First, early involvement builds trust and mutual understanding, which is critical to obtaining financing. Financiers need to trust and believe in the individuals that are managing the company. Indeed, the more comfortable financiers feel with the management team of the entrepreneurial enterprise, the more likely they are to invest.

Secondly, as the investment community gets to know and trust an entrepreneur, it is better able to understand the technology, reducing information asymmetries and providing insights into the associated risks that may otherwise keep them from investing (see Appendix B). The energy industry is complex even to seasoned executives. Investors often feel uneasy entering markets where they feel they may have an unequal access to information — whether it concern a specific technological challenge, the direction of energy restructuring, or the regulatory environment. By involving investors early, they will have time to become more knowledgeable and comfortable with a new technology and its target market.

Thirdly, early involvement of the investor community saves the entrepreneur time further down the road. Entrepreneurs new to the financial community often waste valuable time approaching the wrong set of financiers as they expand their business. For instance, private equity financiers are rarely interested in project financing. Project financing is generally arranged through an investment banker at a commercial bank — not from a venture capitalist.

And finally, the financial community is well networked and can provide invaluable advice. Many investors provide mentoring, make important introductions to other VCs or angels, and identify strategic partners. Investors often track companies for years before they invest and can provide useful advice and feedback on progress. A referral from a trusted colleague in the finance arena may be the most important endorsement you can get.

Below is a brief review of what every energy entrepreneur should know about the funding stages before attempting to raise private-sector financing. Figure 1 illustrates the main funding stages relative to cash flow and typical investors.

A. Early-Stage Financing

In the very early stages of technology development, the enterprise must focus on concept development and R&D. This is where the technical and market risks are the highest, and where private-sector funding is most difficult to obtain. In the energy sphere, the most common sources of early funding come through a combination of traditional bootstrapping and public-sector financing.

Bootstrapping: Van Osnabrugge and Robinson (2000)² define bootstrapping as “a means of financing a small firm through highly creative acquisition and use of resources without raising equity from traditional sources or borrowing money from a bank.” There are a range of sources including retained earnings (the most common), borrowing from friends and relatives, using personal savings and second mortgages, and using credit cards. Entrepreneurs often want to delay private-sector financing in order to maintain a larger part of ownership, as well as control of the business. Hence, although potentially quite onerous to practice, bootstrapping can be worthwhile – up to a point.

² See bibliography for complete literature references.

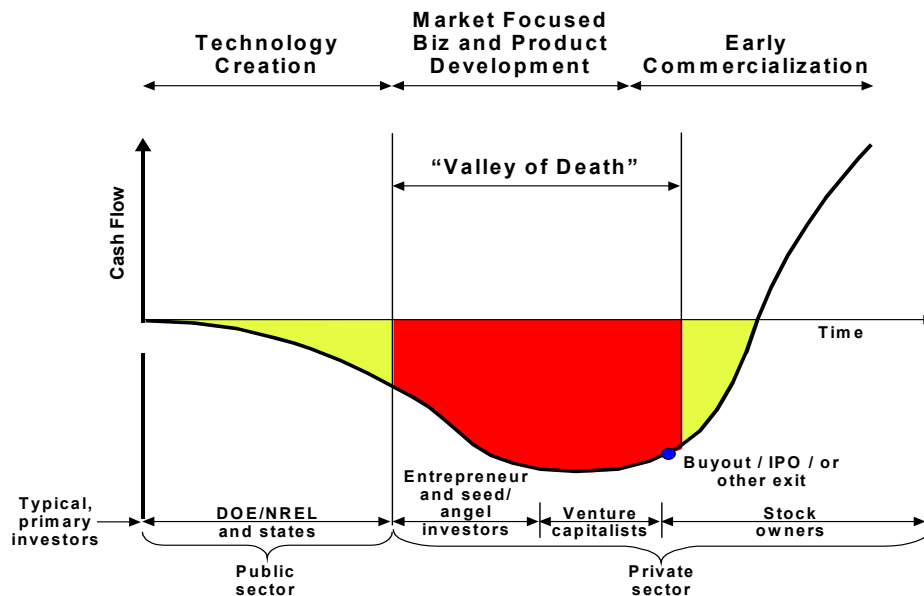


Figure 1: Commercialization Stages Correlated with Financing Sources and Cash Flow For the Venture

If not properly funded, bootstrapping can slow the growth of a new business to an unacceptably low level. Sometimes getting to market only a few months earlier can determine profitability for the entire enterprise. Major problems can occur when large cash infusions are needed but are not available to finance growth and build up the management teams. As illustrated in Figure 1, for companies in the Technology Creation (early-growth) stage, retained earnings are often nonexistent or minimal at best. Another common form of bootstrapping is through government grants and programs.

Public Support as a form of Bootstrapping: The federal government – namely DOE, NREL and other national labs – has provided several billions of dollars during the past two decades to research and develop new clean energy technologies. NREL provides more than half of its roughly \$200 million annual budget to subcontractors, who are mostly technology entrepreneurs³.

The public funding available is focused almost exclusively on technology development that is considered too risky for private investors. In a few cases, public funding is available for activities that extend beyond technology creation or early-stage technology development. However, public funding is not intended to take a company all the way down the commercialization path. There is an assumption that at some point in the early commercialization process, companies will transition to private-sector sources of financing.

B. Private-Sector Financing

Though private financiers vary in their interests and requirements, they are first and foremost, profit-driven—they need to make money or they go out of business. Private-sector investors traditionally invest in market-oriented firms with discrete product lines. These financiers generally have a near-term perspective and primarily invest in strong management teams with a clear plan for moving the business forward.

³ A brief description of the NREL/DOE funding process and requirements, along with some examples of funding with other federal and state agencies, is given in Appendix D.

The required profit level and risk ceiling vary depending on the stage of development and type of investor. Many investors are managing other people’s money and have a responsibility to explain how they select their investments. Double bottom-line objectives are generally only a concern to the clean energy community and public advocacy groups. Table 1 provides a description of the private-sector financing options early in the life of a company. In the initial stage, angels, seed-funding organizations, and early-stage venture capitalists are most accessible to the entrepreneur. In the later phases of this stage, venture capital and investment banking become increasingly important (see Appendix H & I).

Angel Financing: An “angel investor” is simply a modern term for wealthy individual investor. Angels^{4, 5, 6} can be a good source of early equity financing, because significant levels of venture capital⁷ financing is not usually obtainable for early-stage start-ups. However, angels themselves can be difficult to find – particularly those with an interest and expertise in the energy field. Many angels do not welcome unsolicited contact; and, unlike venture firms, they do not have to seek out new clients to stay in business. Moreover, angels are a diverse group – many are former entrepreneurs who have substantial financial capital and skills to bring to the entrepreneurial company. Jim Clark, seed backer of Netscape and former founder of Silicon Graphics, is just such an angel. Many other private investors, however, are clearly unsophisticated and may lack the ability to add value or understand the ramifications of investment.

**Table 1: Equity Financing Rounds over the Early Life of a Company
(from Roberts, et al. 2000)**

Financing Round	Definition	Typical Amounts	Who Typically Plays
Seed	Prove a concept/qualify for start-up capital	\$25,000-500,000	Founder’s Equity Individual Angels Angel Groups Early-stage Venture Capitalists
Start-up	Complete product development and initial marketing	\$500,000-3,000,000	Select Individual Angels Angel Groups Early-stage Venture Capitalists
First	Initiate full-scale manufacturing and sales	\$1,500,000-5,000,000	Venture Capitalists
Second	Working capital for initial business expansion	\$3,000,000-10,000,000	Venture Capitalists Private Placement Firms
Third	Expansion capital to achieve break-even	\$5,000,000-30,000,000	Venture Capitalists Private Placement Firms
Bridge	Financing to allow company to go public in 6-12 months	\$3,000,000-20,000,000	Mezzanine Financing Firms Private Placement Firms Investment Bankers

Source: Adapted by Roberts, et al. (2000) – with Interviews definitions taken from Pratt’s Venture Capital Guide

Entrepreneurs need to think about the skills, contacts, and other resources that investors bring. “Dumb money” may not be the best money. A carefully chosen angel investor can increase the value of the firm and the likelihood of success. A poorly chosen angel investor may mire the company in perpetual conflict. Good angels will be active investors, providing advice, contacts, and credibility. Good angels can add value and credibility by providing help in building the board

⁴ *Angel Investing*, by Michael Roberts, Professor Howard H. Stevenson, and Kenneth P. Morse. Harvard Business School.

⁵ *A Note on Angel Financing*, by Professor Paul A. Gompers. Harvard Business School.

⁶ *Angel Investing, Matching Start-Up Funds with Start-Up Companies: The Guide for Entrepreneurs, Individual Investors, and Venture Capitalists*, by Mark Van Osnabrugge and Robert J. Robinson (2000).

⁷ For an excellent and thorough discussion of the venture capital process, see *The Venture Capital Cycle*, by Paul Gompers and Josh Lerner (1999).

– which is one of the key reasons entrepreneurs approach angels. Further, professional investors, both venture capitalists and experienced angels, understand that crafting the proper deal terms can often mean the difference between success and failure.

Even though angels as a group are not homogeneous, they do tend to have some typical requirements. Most angels expect the major technical issues for the working prototype to be resolved prior to their consideration. Angels expect that their investment will be used to build out an attractive, market-ready product, hire resources and strengthen the leadership team, and to generate sales. Some angels feel that the key responsibility of angel investors is to pick winning companies – not to create winning companies. They feel that the entrepreneur should create the winning company. Angel investors prefer both IPOs and acquisitions as the path to exit the investment. Major reasons that angels don't invest include an inappropriate skill set on the part of the entrepreneur, lack of competitive advantage, a limited market, or no clear exit strategy.

Before asking an angel to screen a prospective investment, an entrepreneur should have a solid summary or business plan that outlines the business concept, presents the product or technology, defines the business model, highlights the competition and other market issues, outlines the financials, justifies the financing need, and defines the path to liquidity. Entrepreneurs can help justify the desired valuation by citing comparable start-ups valuations (see Harvard Business School, 1998 and Appendix for more discussion). Finally, it should be noted that revenues from government contracts can't be used in valuations.

Angel Syndicates: In the past few years, angels have started to band together in associations, funds, and consortiums. These mechanisms are relatively new and have a variety of characteristics and trends.

The most common trend is the use of *angel matching services*. Often Internet-based, these services allow entrepreneurs to submit business plans, which are matched with the investment criteria of the angels. The angels gain access to deal flow, while retaining anonymity through the control of their contact information. These may be free or fee-based, and are often associated with other services. (See text box on Angel Networks).

The second trend is increased cooperation among angels with varying degrees of formal organization for deal sourcing, investment selection, and business advisory activities. According to Van Osnabrugge (2000), *angel syndicates* offer investors clear advantages, including pooling money to invest in larger deals otherwise out of reach, diversification across multiple investments, leveraging and sharing of network contacts/investment expertise (such as screening, due diligence, and monitoring), the ability to add more investments to an existing portfolio (Kelly and Hay, 1999), and the ability to add further follow-on rounds to existing investments.

The third form of angel association is the *angel fund*. Using the same structure as the venture capitalists, angels are raising their own funds with the angel investors providing not only funding, but also all other angel activities from investment screening to business advisory services.

A potentially complementary relationship can exist between business angels and venture capitalists, where the angels act as the farm system for the VCs. Moreover, some venture capital firms and matching services such as Garage.com have both business angels and venture capitalists as members.

While it is true that angels provide a huge portion of the start-up funding in the United States, and have many advantages, it is not quite as dominant as one might think. In fact Gompers (1998) notes that “The capital provided by venture capital firms is the dominant form of equity financing for private equity held technology-based businesses.”

Venture Capitalists: Venture Capitalists (VCs)⁸ provide an important source of funding when less expensive sources are unavailable. The VC typically targets attractive industries (Zider, 1998; and Boschee, 2000), and invests in the business, expecting growth in its value and the underlying investment. VCs also provide business expertise to improve the prospects of success as well as assistance with a sale or public offering of the business as a way for all owners to realize gains from their investments.

From the entrepreneur’s standpoint, the VC is there to provide funds for a growing business and to share in the rewards. To the VC, this investment opportunity is expected to provide a significant return to compensate for the risk. While a capital investment in a public company may have an expected return of 10-15% (historical market returns), the associated risk of a new venture drives VC’s expectation to a 25% or more return based on the specifics of the company.

These high-risk companies – having moved beyond the R&D stage – typically do not have access to lower-cost sources of funding such as bank debt or public equity. With few tangible assets and low or nonexistent revenues, new ventures must rely on financing from entities willing to engage in high-risk investments (see Appendix B).

Good venture capitalists, often referred to as “smart money,” bring more to the business than simply financing. VCs typically spend 70% of their time on activities that have direct benefit to the company, including consulting, monitoring, recruiting, and assisting in relationships with third

Variety of Angel Networks

As angel networks are an evolving phenomenon, it is valuable to understand how a few of the prominent networks differ.

One of the most prominent is **ACE-Net**, an initiative through the Small Business Administration. ACE-Net, in addition to providing the traditional matching services, also offers templates for securities transactions, education, mentoring, and research services. ACE-Net has local affiliates, usually tied to state entities. Quoting its Web site “ACE-Net currently has 359 investors and 276 entrepreneurial listings. ACE-Net has raised approximately \$700 million since 1997, with an average deal of \$1.2 million.”

In contrast, Silicon Valley-based **Garage Technology Ventures (a.k.a. Garage.com)** is a venture capital investment bank that provides business-plan screening and matching services to members. Garage also provides services ranging from broker/dealer functions to recruiting interim management for start-ups. Their Web site boasts “Since 1999, Garage Technology Ventures has completed 77 transactions raising over \$285 million in venture capital for clients.”

A third example is an **Active Angel Fund**, organized by Sound Point Ventures out of Seattle. These funds are a coordinated effort of accredited investors pooling their financial resources and expertise to find, evaluate, invest in, and contribute to growing companies.

⁸ See *From the Field, Inside Venture Capital*, Harvard Business School (October 2000). This document contains Bob Zider’s article and eight case studies, which include questions and relevant ideas to consider.

parties (Zider, 1998). In addition, VCs have large networks that they tap for everything ranging from potential industry partners to recruiting executive management to coinvestors. VCs have substantial contacts with seasoned executives capable of providing leadership talent for early-stage firms (for example, executives who may have lost their positions in the recent downturn for dot.com and telecommunications companies). These types of individuals often have unmatched experience with launching and growing a company.

Additionally, venture capitalists provide credibility to a firm that perhaps is negotiating credit terms with a supplier. The presence of VC funding gives the company a stronger image of legitimacy and credit worthiness in the eyes of a third party. VCs provide all of these, simply in the course of looking after their own investments.

Lastly, VCs provide assistance with the “liquidity event,” or exit. The investors – and presumably the entrepreneur who has founded the company – seek to reap the benefits of their labor. The two primary mechanisms for realizing gains from the investment are the sale of the company to a strategic buyer and the selling of equity into the public markets. The venture capitalist usually can assist in identifying potential buyers and formulating strategies for the sale of the company. In pursuing a public offering, the relationships with investment bankers and negotiating an attractive valuation are areas of significant value provided by the venture capitalist.

Table 2. Comparison of Some Typical Characteristics of New Energy Technology and Software Companies

Characteristic	New Energy Technology	Software
Time from Idea to Commercialization	5-10+ years	6-18 months
Markets	Typically fewer, but can be much bigger customers; and more difficult to find (these energy businesses may often be based on disruptive technologies)	Often many more customers; easier to define
Margins	Relatively low early on; though these can grow significantly over the long term.	High
Investment Required For R&D, prototyping, long-term data verification (5 years), and manufacturing	Often \$10M+; Much more for each element of the business	Often on order of \$1M or less; Less for each element
Facility Requirements	Often high	Typically small
Distribution	Frequently limited options	Often many options
Bootstrapping (public-sector sponsorship)	Good for technology R&D piece only – but may be available at a number of stages	More difficult in general
Bootstrapping (nongovernment sponsorship)	Initially OK if feasible; long-term, it is much harder because of investment size needed.	Often OK/feasible over much of the commercialization process
Angel Financing Availability	Can be important partners on front end	Can often be the sole financier over most of the company formation phase

VCs often syndicate the deal, giving it more exposure and resources – and thus value – as well as adding significant protection for their own investment. Technology-based businesses are often more complex, involve greater uncertainty and require larger investments than the average venture. For these reasons, VCs are better able to handle the deals.

However, the entrepreneur must be aware of the risk context from which the investor is operating, and adjust his/her strategy accordingly. Over half of a VC's investments do not return more than the invested capital (See Appendix B for a more general discussion of risk). Thus, there must be a few big winners to offset the losses.

Moreover, the risk perception of energy deals is higher because the characteristics of energy deals are much different than the typical high-tech software or biotech deals. Table 2 (previous page) compares these striking differences. Many angels and VCs are accustomed to seeing investments with higher margins, a shorter commercialization time frame, and less capital intensive. In many ways, energy technologies are a challenge for some VCs. But, with that said, the market is seeing an amazing growth in the number of VCs interested in financing energy technology deals.

Given what VCs demand as well as provide, the prudent entrepreneur will be selective in his/her pursuit of VC financing. NREL has compiled a directory of some of the VCs and other investors active in the clean energy arena, which is a good way to become familiar with some of the players (the Clean Energy Investor Directory can be accessed on NREL's Web site at <http://www.nrel.gov/technologytransfer/entrepreneurs/directory.html>). Furthermore Appendix H & I contain tips on developing a strong business plan and presentation to present to VCs or angel investors).

Project Financing: Typically, project finance involves both debt (often 60-70%, but it can be as large as 90%) and equity; and because debt is usually lower in cost than equity, it can be quite attractive in the appropriate conditions. Project financing is suited to situations where the output of the project (e.g. energy or a commodity product) can be sold and used to service the debt part of the financing.

Companies are increasingly using *project finance* (see Harvard Business School, March 2000) to fund large-scale capital expenditures. Notable examples include the \$16 billion Channel Tunnel, and the \$1 billion BP-Forties Field Project discussed in Appendix F. Moreover, the need to finance new power plants with long-term power purchase agreements, such as with the Public Utility Regulatory Policy Act (PURPA) of 1978, created a natural application for project finance. The private-sector project finance investment level was estimated at \$96 billion in 1998. Generally, effective projects are large in the \$100 million and above range. This is because negotiating the deal structure – including the financial, construction, and operational contracts – is often extremely time-consuming and expensive.

The use of project financing for entrepreneurial ventures may be appropriate if the company is fairly mature, and the technology to be used is sufficiently well developed and demonstrably reliable. If this is the case, then the debt investors must be confident that the project can service the debt effectively, and the equity holders also must be confident that the risks to their investment are acceptable. Of course the newer the technology product, and the lower the experience level with the technology in the field, the greater the perception of risk, and therefore the cost of the financing will be correspondingly higher – or not available at all if the risks are deemed to be too large.

Clean energy projects have been successful in a number of areas, including those for electric power using established biomass gasification, photovoltaic, wind, and solar thermal technologies. Examples where project financing can be appropriate, but is generally hard to get,

is for the first-of-a-kind, large-scale, pilot facilities such as those for manufacturing and processing of relatively new photovoltaic or biomass-to-ethanol technologies. In such situations, though the technology may be extensively developed up through successful small-scale pilot projects, scale-up itself may be viewed as risky by potential investors. This is primarily because the cost reductions that are anticipated with the larger-scale facility may not materialize as predicted.

Investment Banking: Investment banks represent the so-called supermarkets of financial services – and they cater to a wide range of consumer financial needs. Many of these services, such as preparing and issuing public equity, will often be most appropriate for firms in the later stages of development.

Investment banks help companies and governments issue securities, help investors purchase securities, manage financial assets, trade securities, and provide financial advice. There are many large investment banking firms, such as Goldman Sachs, that have offices in most major cities; while there are others – such as Piper Jaffray; and Adams, Harkness, and Hill – that are more regional. The giants of Wall Street, such as Goldman Sachs, are full-service organizations that offer virtually any security-related service to investors. Some, such as Montgomery Securities, even have their own venture capital business that invests along with the classic venture capitalists.

There also are many small, specialized investment banking firms called *boutiques*, which might be oriented toward bond-trading, merger and acquisition advisory, technical analysis, or program trading. Investment firms generally have many different focus areas with diverse organizational responsibilities within them. The structure of most firms includes *sales and trading*, which works with owners of securities; *investment banking*, which works with issuers of securities (firms and governments); and *capital markets*, which goes in between the other two. Even if a particular investment bank does not provide a particular service, such as project financing or venture capital, they are typically well connected to other groups that do.

Nesheim (1997)⁹ describes how the investment banker takes the central leadership role at the time a company decides to do its first public offering of stock. It is the investment banker and his firm who will gather the lawyers, the analysts, and the many others who are needed to do the work for the IPO. The documents must comply with a complex set of securities laws. The behind-the-scenes workload is enormous and time-consuming and must be done with significant attention to detail. The investment banker is hired and paid well to ensure that the deal is done successfully by all the individuals involved. This job is akin to that of a shepherd herding a flock of sheep to market.

The “fee” charged by the investment banking firm is negotiated between the company and the investment banking firm. It is actually not one fee, but a collection of fees granted to various members of the syndicate that team up to take a company public. IPO costs — which can be on the order of 20%, as a percentage of the value of all the shares sold in the IPO — rise rapidly as the deal gets smaller. This occurs because the amount of work to raise \$10 million is about the same as the amount of work to raise \$25 million. The top investment bankers will typically strongly advise a start-up to raise as much as possible, usually in the region of \$25 million.

⁹ In *High-Tech Start-Up: The Complete How-To Handbook for Creating Successful New High-Tech Companies*, John Nesheim provides an excellent overall description of investment banking as it relates to the entrepreneur. This book includes examples of investment firms that specialize in high-tech entrepreneurial companies. He also provides advice on selection such as “Start by finding the best research analyst, one who understands the industry and technology; and pick a firm known for its integrity.” See also *Vault.com Career Guide to Investment Banking, Third Edition*, by Anita Kapadia, Chris Prior, and Tom Lott.

II. Strengthen Business Fundamentals

Although being familiar with the financial community is an advantage, it is not enough for the early-stage enterprise to ensure financing. Building a business that will attract investment means strengthening business fundamentals early by pursuing a parallel path of technology development and enterprise development. Successful entrepreneurs recognize that a strict technical focus in the early phases of development probably will result in a great technology, but great technologies rarely succeed by themselves. However, great businesses using good technologies usually do succeed — and typically get financed.

Unfortunately, the pressures and constraints of commercialization do not always allow start-up companies to address critical business fundamentals in a timely manner. Because of the high cost of technology development, many clean energy companies spend much of their developmental stage pursuing government contracts as a means of survival. Some have built their businesses around the characteristics that they believe will secure more governmental support. As a result, many entrepreneurs build “uneven” organizations with strong technical skills but lack depth and business acumen. This imbalance in development can keep a company from attracting financing.

Table 3: Enterprise Development Gaps as Seen in Many Entrepreneurial Clean Energy Companies (Murphy, 1999)

	Start-up Clean Energy Companies Frequently Have	Investors Want
People	Strong technical expertise; a desire to retain ownership and control	Well-rounded and experienced management team; including start-up experience.
Product	Protected intellectual property position; technical benefits well defined; often still focused on technology and not on developing a marketable product	Protected intellectual property position; a clearly defined product or set of products; market drive and clear customer benefits well articulated
Strategy	Narrow technology focus with limited profitability horizon	Strong market focus with sustained high profitability and technology platforms, which allow for product and market diversification
Markets	Technology push; often oriented to attracting more sponsored R&D; competitive position not well defined	Market creation and technology pull; many identified customers (min. \$100M/yr. Potential market opportunity) and poised for rapid growth; competition well understood
Financing	Inadequate justification and definition on amount of investment required or expected, return on investment (ROI) and exit strategy	Clearly defined plan for use of funds to grow business providing high ROI (40%) and a clear exit strategy (~5 yrs) described
Business Plan	Incomplete or nonexistent	A comprehensive and integrated picture of all of the above – to bring the technology to market

Table 3¹⁰, above, illustrates the “development gap” between investors’ expectations and the status of many energy firms seeking financing. To the investment community, each of these developmental components is a link in a chain. Any missing link is a serious gap that represents a risk to the viability of the business, and can lead to only marginal success or even failure for the business. Moreover, the earlier the entrepreneur starts to fill these development gaps, the earlier the business is likely to start attracting capital at a reasonable rate. By addressing these gaps, the business is providing assurance to the investor that they are on, and likely to stay on, a trajectory for commercial success.

First, investors want to know about the people they are trusting with their money. Investors want to invest in management teams with start-up and business experience, and people whose capabilities and integrity they can trust. Investors commonly say that they would rather invest in a company with an “A level management team” and a “B technology” rather than a company with a “B management team” and an “A technology.”

Secondly, investors look for market-driven products, not necessarily technologies. A technology has no intrinsic value; it has value as an enabler of products and services that meet customer and market needs. Its value is context driven. In venture forums, such as the NREL-sponsored “Industry Growth Forums,” the focus of the investor is on the benefits that the product can provide the customer, and the comparison of these benefits with the competition. The entrepreneurs, however, often want to regale the panel with the technical benefits and the strength of their ideas; however they frequently find it difficult to translate those characteristics into real customer benefits.

And finally, investors look for a solid business concept and strategy that encompasses a broad range of contacts and established relationships with suppliers and industry leaders. This strategy should convey a deep understanding of the market, define how funds will be spent, and establish a clear exit strategy that can be exercised within five years.

Entrepreneurs need to be keenly aware of where they are in the funding process and what is required to qualify for new financing. Table 4 illustrates the typical partners and progress necessary to qualify for each successive round of private-sector financing.

Typically, the entrepreneur can expect to deal with more than one round of financing, including additional partners. For example, an entrepreneur may receive funding from an angel early on, followed by one to two VCs after the midpoint of this stage is reached, and an investment banker as the early commercialization stage is approached. Of course, there will be strong motivation to limit the number of financiers involved to keep complications to a minimum. More important, the entrepreneur will want to limit the number of rounds to avoid diluting their investment.

Thus, it is important that the entrepreneur request the full amount of what he/she can justify at each round. Moreover, even within a single round of financing, the financing is likely to be apportioned over time in connection with milestones and other demonstrated progress that indicate growing value.

Lack of attention to market considerations is one of the most common mistakes of energy entrepreneurs. Technologists often wrongly assume that an elementary understanding of the market will carry them through the seed and start-up phase and are perplexed when they fail to raise any capital.

¹⁰ The table was created using written and informal comments made by the investor panelists who attended the forums.

Note that each stage of private-sector financing, including the pre-seed stage, includes a distinct *market component*. The last column, *key processes*, refers to the multifunctional and interlinked processes (defined by Jolly, 1997) that are needed for each stage. The requirements column lists milestones typically required for each financing stage.

The extent of the market focus for each stage evolves as the business evolves. For example, in the pre-seed stage, the entrepreneur must define the market need and attempt to roughly quantify it. In the seed stage, markets must be carefully quantified, competition characterized, and initial customers identified with letters of intent to purchase if possible. In the start-up phase, the customer base must be growing rapidly to obtain the next round of financing.

	Financing Round	Who Typically Plays	Typical Qualifying Requirements for Next Round	Key Processes
Technology Creation	Bootstrapping Concept Generation	Entrepreneur	<ul style="list-style-type: none"> ▪ Exciting technology concept, linked to a market need ▪ Applications identified 	<ul style="list-style-type: none"> ▪ Research ▪ Development ▪ Marketing
	Pre-Seed: Technology Development	Personal / Public Support (e.g. DOE/ATP /SBIR/States)	<ul style="list-style-type: none"> ▪ Key patents applied for/secured ▪ Technical feasibility and initial commercial feasibility with prototype demonstrated ▪ A plan for taking the business forward is available ▪ Substantial market need quantified and competition identified 	<ul style="list-style-type: none"> ▪ Development ▪ Engineering ▪ Marketing
Market Focused Business Maturation	Seed: Prove a concept qualifies for start-up capital	Individual Angels Angel Groups Early-stage Venture Capitalists	<ul style="list-style-type: none"> ▪ Business/commercialization plan available; ▪ Specific markets, including competition, well characterized; and initial customers identified ▪ Attractive market-ready products /or processes available. ▪ Management team identified 	<ul style="list-style-type: none"> ▪ Development ▪ Engineering ▪ Manufacturing ▪ Marketing
	Start-up: Complete product development and initial marketing	Select Individual Angels Angel Groups Early-stage Venture Capitalists	<ul style="list-style-type: none"> ▪ Launch of commercial product and/or process ▪ Strong management team in place ▪ Rapidly expanding customer base 	<ul style="list-style-type: none"> ▪ Manufacturing ▪ Marketing
	First: Initiate full-scale manufacturing and sales	Venture Capitalists	<ul style="list-style-type: none"> ▪ Large customer base, and still growing by new constituents ▪ New products and new processes 	<ul style="list-style-type: none"> ▪ Research ▪ Development ▪ Engineering ▪ Manufacturing ▪ Marketing

Table 4. Typical Qualifying Requirements for the Next Round of Financing and Key Processes Involved for Specific Financing Rounds.

Because many energy entrepreneurs develop their enterprises in an uneven fashion, focusing almost exclusively on technology development and engineering, they often assume they are ready for seed or start-up financing when, in reality, they have not satisfied basic market and business planning milestones.

Furthermore, if continued technology development work is not well coordinated with the development of other parts of the business, these efforts can have decreasing value in the eyes of the investment community. For example, if the markets are not understood in detail, the investor will question whether the product development is on target as well. This conclusion is consistent with Lerner's (1999 and February 2000) findings in a statistical study of 1500 SBIR

awardees. Lerner finds that “the awards which had so positive an influence on recipients of single SBIR grants, had no positive effect on the winners of large numbers of grants.” In other words, multiple government awards do not increase a company’s chance of market success — but may keep it on a public-financed track. On the other hand, if continued technology development is synchronized with key business-development areas, especially in the areas of market and management team development, the value of these technical efforts can increase significantly.

Addressing this development imbalance can be daunting, but the rewards are immense. A well-rounded enterprise not only increases the intrinsic value of the business, it lowers the perceived risk, and hence increases the value to the investor.

Finally, we should note that the existence of these developmental gaps was the motivation for NREL’s creation of the *National Alliance of Clean Energy Business Incubators*. For a description and discussion of the alliance, see <http://www.nrel.gov/technologytransfer/entrepreneurs/inc.html>. Capable business incubators help entrepreneurial companies accelerate the development of a strong market-focused business case and model. Incubators also can assist in the assembly of a strong management team to support the business through contacts, mentoring, and networking services. Thus, incubators can increase the number and the rate of business successes, while adding significant enterprise value and making them better investment opportunities.

III. Moving from a Technology to a Market Focus

Market Focus is a Key Success Factor for Entrepreneurs

Investors are acutely aware that the market is the source of profits. In fact, private-sector investors often use market robustness as a way to indicate the value of a business and to deal with a host of uncertainties and other risks. If the market size is sufficiently large, then errors in financials, such as projected costs and market share, may still allow the venture to be viewed positively by the investors.

Thus, successful entrepreneurs are focused on their target markets. These entrepreneurs rely heavily on market information to design and build a product that customers need and will pay for. In the excitement to commercialize a promising technology, this market-oriented concept, though simple, is often overlooked and quite difficult to implement.

Clean energy entrepreneurs face an added challenge of explaining or defining a market that is just emerging. Such is the case for “*disruptive technologies*,”¹¹ which offer a different value proposition. Many of these new markets must be created and developed, while attempting to sell in to existing markets where the entrenched competition is fierce and may have an unfair market advantage, particularly in the short term.¹²

¹¹ See the discussion on “The Ratio of Marketing Investment to Engineering Investment (exclusive of promoting or selling), the Marketing/Engineering Investment Ratio.” © 1992-1999 Ralph E. Grabowski at <http://www.marketingvp.com>. See also figure shown in <http://www.marketingvp.com/include/i-800.htm>

See *The Innovator’s Dilemma*, by Clayton M. Christensen. See also a related review article “*Danger, Stealth Attack*” by Toni Mack and Mary Summers from *Forbes*.

¹² See examples given by Alderfer, B., M. Eldridge, and T. Starrs in *Making Connections: Case Studies of Interconnection Barriers and their Impacts on Distributed Power Projects*, which was prepared for the National Renewable Energy Laboratory. The report states that “Many of the distributed generation developers that were interviewed believe that some utilities use unreasonable terms, excessive costs, and inappropriate delays to either gain utility advantage or impede the market for distributed power.”

The process of developing new markets takes time and considerable effort. The initial entry market for many new energy products may not at all resemble the intended long-term market. The initial market also may not be as robust as many investors would like. Hence to get and keep the interest of the investors, the management team must be able to build a strong case around their market development strategy. Investors are always suspicious of the slightest inconsistency related to market definition and size. If the investor is not familiar with the energy industry, these information asymmetries create uncertainty and a higher perception of risk.

Additionally, from the perspective of an investor, government grants and financing can be a double-edged sword. On the positive side, government programs that further commercialization through prototyping a technology with real customers or optimizing the manufacturing process are viewed encouragingly. These funds can be leveraged in a manner that complements other investment dollars moving the company down a clear commercialization path (see Harvard Business School, 1996).

The DOE/NREL PVMat Program is an example of a program that leverages government support to assist photovoltaic companies in tackling manufacturing issues. This program is well received by financiers as adding value to the business and putting the entrepreneur on a track to commercialization. Other activities viewed positively include short-term government “buy downs” of technology that have the intention of building manufacturing experience and bringing down real costs.

However, when investors perceive an over-dependence on government contracts, it leads them to question whether there is a real market for the technology. This is especially true if the government-sponsored efforts appear to be diverting the focus away from market entry and business development. If there is a perception that the market is driven by technology-push rather than market-pull, investors will shy away. They don't want to be left holding the bag when a technology falls out of favor or a subsidy has ended.

Building Financeable Companies

All three of the characteristics described here are necessary to create an entrepreneurial venture that will easily attract financing. Successful entrepreneurs:

1. Take time to understand and involve the financial community in the developmental process
2. Strengthen business fundamentals early in the commercialization process
3. Are focused and driven by market considerations

Taken together, these three characteristics encourage entrepreneurs to build a strong market-driven business while developing working relationships with financiers. This task is easier said than done, given the constraints under which energy entrepreneurs work. Often, competing objectives, government mandates, and rigid policies challenge organizations that sponsor technology development.

In view of all the uncertainties surrounding technology development and innovation, it is not surprising that some entrepreneurs view business success as something of a lottery, with no explanation for why one company succeeds in attracting financing and another fails just as its technology is refined. But the authors believe that the characteristics described herein strip away some of the mystery and bring innovation and private-sector financing into the realm of concrete business steps, which may be logically planned. If a company has a solid technology base, and it is able to focus on building solid business fundamentals while maintaining a strong

market focus, we are confident that they will be able to successfully build a strong working relationship with investors and then receive the funding they need.

Finally, we should note that this paper has been focused on what the entrepreneur needs to do to attract the needed financing. Of course, others can play significant roles in aiding this process. Future papers will discuss this issue more fully. For instance, in Appendix G, we give a brief and preliminary picture of what the public sector might do to help in this process.

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APPENDICES

Appendix A – Sources of Private Financing for Business Development

Appendix B – Risk Context for Entrepreneurial Ventures

Appendix C – Angel Characteristics

Appendix D – A Sampling of Government Sponsorship For Clean Energy Technology

Appendix E – The Valley of Death

Appendix F – Project Finance

Appendix G – Public-Sector Role in Creating Financeable Companies

Appendix H – Tips for Presenting to the Financial and Venture Capital Community

Appendix I – Business Plan Basics

Appendix - A: Sources of Private Financing for Business Development

The financial community (and even the venture community within the financial community) is far from monolithic. A number of financing options are available depending on the stage of development of the business. Table B-I shows different kinds of financing that are available at different stages of development. The table is based on one in *Pratt's Guide to Venture Capital Sources*,¹³ the leading source of information on the topic. We have added angel financing to this table – angel financing is discussed in Appendix C – in the start-up and early growth phases. It is important to also point out that most of the venture capitalists that have supported Industry Growth Forums focus on earlier-stage and smaller deals than is typical of many venture capitalist firms.

Table A-1: Sources of Business-Development Financing Opportunity and Complexity

Stage of Development	Risk Profile and Principal Risk Elements	Financial Characteristics	Typical Financing Instruments
Start-Up	Highest: Management Product Market Financial	Losses Minimal assets Negative cash flow	Founders' equity Angel equity
Growth	Moderate: Management Financial	Break-even to profitable Rapidly growing assets Negative or modestly positive cash flow	Bank loans (mid-later growth) Leases (equipment) Private equity (early growth) Public equity (later growth) Strategic alliances
Maturity	Lowest: Competition	Profitable Stable asset levels Positive cash flow	Bank loans (working capital) Leases (equipment) Public and private equity Strategic alliances Mezzanine debt Private and public debt placements
Decline/ Turnaround	High: Financial Management Product strategy Market strategy	Losses Declining asset values Cash flow positive or negative (asset liquidation)	Asset-based financing Public equity (dilutive) Turnaround investors

An excellent source on private equity can be found in Josh Lerner's note¹⁴

¹³ *Pratt's Guide to Venture Capital Sources*, updated periodically by Securities Data Publishing/Venture Economics. There is no such guide to angels.

¹⁴ *A Note on Private Equity Information Sources*, Harvard Business School. This article is also contained in *From the Field: Inside Venture Capital*, Harvard Business School.

Appendix – B: Risk Context for Private-Sector Investors

While there are a good number of financiers potentially available to the entrepreneur (see Appendix A for a listing of private funding sources),¹⁵ which represent a spectrum of opportunities, each category of financier often has a narrowly defined area of focus. This area often has separate – and, frequently, very specific requirements – often related to risk that correspond to the stage of development of the entrepreneurial venture.

In the early stages, for instance, risk is high for a number of reasons, including technical (*will the performance/cost be as predicted?*), and market risk (*will the markets be as large as anticipated, and will some unforeseen competitor emerge?*). As the business matures, risk usually decreases due to resolution of uncertainties, and shorter time frames (to commercialization) for new negative externalities to arise.

Information asymmetries, where the entrepreneurs have more information about their technology than the investors, are another risk concern; they have been studied extensively by Gompers and Lerner (2001).¹⁶ The larger the information asymmetries, the larger the perceived risks will be, and thus the investment will be discounted proportionately more. Technology investments are often perceived to have larger information asymmetries than other types of investment, and thus these asymmetries are a major concern for equity investors in such enterprises.

These and other risks, such as those corresponding to “soft assets,” will dictate what returns investors will require, and even the type of financing that is available, as well as the type of investor willing to take on the risk. For example, in the early stages where risk is high and cash flow is negative, the capability to attract debt financing (at a reasonable cost) is quite limited. This is not only because the capacity to service the debt is nonexistent, or at best minimal, but also because few fungible assets are available as collateral. Thus, some type of equity financing (giving a piece of the equity in the business in exchange for the required investment) is usually required.

Table B-1: Approximate Discount Rate Ranges in Valuing Businesses. Real and Perceived Risks, and Lack of Liquidity at Early Stage, Drives Up Discount Rates¹⁷

Development Stage	Discount Rate Range (%)	Characteristics
Seed Stage <i>Technology Development</i>	>80	Concept exploration with no defined business plan
Business Start-Up	50–80	Product or concept with commercial application has been demonstrated
Initial Stage Business	40–60	Product revenues recorded, but not necessarily profits
Middle-Stage Business	30–50	Product viability demonstrated in marketplace
Pre-Initial-Public-Offering Financing	25–35	Established product and market, emphasis on revenue growth
Historical Market Average	12–13	Mature business

¹⁵ There are also public sources of funds such as DOE; these will be addressed later.

¹⁶ See Chapter 2, in particular.

¹⁷ Karyl Misrak, Coopers, and Lybrand. Private communication. Coopers and Lybrand does not make such early-stage investments, but these discount rates are representative of what they would use for valuing the business.

Insights on perceived risks, and the approximate returns required to compensate the investor for those risks, can be obtained from the perspective of an investment banker, as shown in Table B-1 above. Table B-1 illustrates the discount rates that the investment bank would apply to the business, for valuation purposes, as a function of the development stage for the venture. This information shows that the required discount rates in the early stages can be prohibitively high for some investors.

Yet another perspective on the actual risk that venture capitalists (VCs) experience is seen in a recent example from Zider.¹⁸ VCs invest other people's money, which they raise from a large number of sources including pension funds, corporate sources, and major banks. They usually raise a specified amount of money for a particular fund that has specific objectives, and then they invest this money in accordance with their investment philosophy. They invest in ventures that are typically in the later part of the early commercialization phase of the venture. In Zider's example, the breakout of performance corresponding to a typical portfolio (per \$1,000 of investment) is provided in Table B-2 below.

An example of a VC's typical investment portfolio, is shown in Table B-2 where the net return for the portfolio is 34.5%. More than 50% of the net return came from only 10% of the investments, while 60% (!) of the investment netted a return of less than, or equal to zero. It may seem quite remarkable in one sense that such a large part of the portfolio is nonperforming given that the VCs are investment professionals. VCs as a rule are quite careful and selective (through due diligence) of their investments. Thus, with all the care (VCs fund only about 1% of the deals they look at)¹⁹ planning, and oversight their risks are still high.

Table B-2. Typical Venture Capital Portfolio Performance, Per \$1,000 Invested²⁰
Portfolio Company Performance

	Bad	Alive	Okay	Good	Great	Total
\$ Invested	200	400	200	100	100	1000
Payout yr. 5	0	1X	5X	10X	20X	
Gross Ret.	0	400	1000	1000	2000	4400
Net Return	(200)	0	800	900	1900	3400

Given these risk perceptions and experiences, it is not surprising that getting the needed financing in the early stages of a technology-based venture is quite difficult; especially in the very early, negative cash-flow regions, and especially from traditional commercial resources.

Zider and others (e.g. Gompers and Lerner) give a good description of the rewards that venture capitalists receive for their support of specific ventures. They nominally receive about 2% of the money under management as a fee, and a percentage of the profits (typically in the 20% range), though it can vary significantly. So for a fund of \$100 million, with a nominal return as in Table 2, the VC firm would receive \$2 million annually as a management fee, and another \$76 million after all the investments were cashed out (usually after five to seven years). A member of the VC firm that serves on the board of the entrepreneurial venture will receive an additional stipend as well.

¹⁸ See "How Venture Capital Works," by Bob Zider from the *Harvard Business Review*.

¹⁹ See *A Note on Angel Financing*, by Professor Paul A. Gompers.

²⁰ Similar results are reported elsewhere. See, for example, Appendix C in *NREL Industry Growth Forums - Lessons Learned*, by L.M.Murphy. For a Web-based version of this report, go to: http://www.nrel.gov/technologytransfer/entrepreneurs/ce_growth.html

Appendix – C: Angel Characteristics²¹

Private "angel" financing is much more likely, as it is actually the business angel who is the real venture capitalist. As compared to venture capitalists, angels typically:

- Tend to invest in very early-stage companies
- Are many more in number (~250,000);²² and there are numerous groups of angels (see Table C-1), who provide more funding especially in the early stages. In fact, business angels provide 84% of rounds under \$250,000, and 58% between \$250,000 and \$500,000.
- Are harder to find—there is no analog to “Pratt’s Guide to Venture Capital”
- Do not have to invest
- Tend to invest in areas that are more technically and operationally familiar
- Have a longer time constant and are more risk tolerant, particularly if they think that the entrepreneur’s idea is attractive for “nonfinancial” reasons, *i.e.*, the idea has the right performance “bells and whistles”
- Require a somewhat lower return on investment, typically about 25% vs. about 35%–40% for the venture community
- Lend at smaller levels (most often under \$1 million)
- Require less equity (smaller piece of business)
- Are less involved in the day-to-day business operations
- Are located physically closer to the business entity with whom they are involved (often within a 50-mile radius)
- Accept a relatively higher percentage of deals.
- Are much less homogeneous as a group (*i.e.* “Angels are not created equally”).

A Sampling of Angel Networks (many are nonprofit; fees are generally required)

ACE-NET: Angel Capital Electronic Network. A national network of angels in operation since late 1996. Part of Small Business Administration Office of Advocacy. Not many deals have been done yet. <https://ace-net.sr.unh.edu/pub>

Active Angels. Seattle, Washington. Managed by Sound Point Ventures. Provides a novel approach for angel investors to invest together in a collaborative process that encourages learning and fosters community. www.activeangels.com

Band of Angels The Band of Angels is a formal group of 150 former and current high-tech executives and entrepreneurs who provide counsel and capital to start-up companies. www.bandangels.com

Technology Capital Network. Cambridge, Massachusetts. Affiliated with the Massachusetts Institute of Technology. Earliest capital network (started in 1984). www.tcnmit.org

Investors Circle. San Francisco, California. Concentrates on businesses operating in such “socially responsible” areas as health, education, energy conservation, and community development. Has about 180 investors. www.investorscircle.net

Western Investment Network. Seattle, Washington. Concentrates on businesses in the Northwest. 206-441-3123

Pacific Venture Capital Network. Irvine, California. Part of an array of services for the entrepreneur, all affiliated with the Graduate School of Management at the University of California at Irvine. A node on ACE-Net. 714-856-8366

²¹ In addition to the extensive discussion of angels by Van Osnabrugge et al. (2000), other popular books are available. For instance, see Benjamin (1997) for his detailed descriptions of 10 different types of angels along with their perspectives and operational approaches. Another popular reference is Coveney et al. (1998).

²² Despite the number of active business angels, it is widely believed that the financing potential of these angels is not being fully used.

Appendix - D: A Sampling of Government Sponsorship Vehicles For Clean Energy Technologies

There is a wide range of sponsorship opportunities for technology development at both the federal and state levels. Each agency and national lab, if involved, will have its own specific needs and requirements, and so we will give only a few examples. We recommend that the entrepreneur contact the relevant agencies for specific information.

The major forms of federal technology development sponsorship are grants, subcontracts, and Cooperative Research and Development Agreements (CRADAs).

Although NREL does not fund grants directly (but DOE does), it does a great deal of subcontracting with its industry and university partners. In fact about 50% of the NREL budget is focused on subcontracted efforts. NREL typically does collaborative R&D with its industry partners, and the focus is most frequently on activities that will benefit industry groups in specific technology areas.

The majority of these subcontracts are awarded using a competitive process – via a Request for Proposals (RFP), with R&D partners that are part of a technology program such as Photovoltaics, Wind, Biomass Power, etc. See <http://www.nrel.gov/st.html> for a short list of the major technologies.

Depending on the entrepreneurial business, and the specific RFP, cost share may be required. Selection criteria also will vary, but quality of technical approach and team – along with fit within the framework and needs of a given technology program – are usually major elements. To become a subcontractor in a technology program, you should respond to the RFPs and get your organization on the solicitation list. See: <http://www.nrel.gov/contracts/index.html>

NREL/DOE does Cooperative Research and Development Agreements (CRADAs), as well as “work for others” (WFO), in which NREL acts as a subcontractor to the entity wanting the work done. CRADAs allow industry members access to NREL staff and facilities. The projects must be carried out on a noninterfering basis with ongoing DOE programs, and focus on technology research or development issues of mutual interest to the industry partner and to NREL. CRADAs are either “no funds exchanged” or “funds in” from the industry partner to NREL. No Web site is available as of this writing.

Finally, NREL also licenses its technology to industry. See: <http://www.nrel.gov/technologytransfer/lic.html> .

An example of a DOE grant program is **The Inventions and Innovations Program** for very early-stage companies. Their Web site is at: <http://www.oit.doe.gov/inventions/>. Other government grants and additional funding can be found on a number of sites including <http://www.nrel.gov/technologytransfer/entrepreneurs/qfp.html>

Several linkages that are of interest can be accessed through the NREL site. These include [The Advanced Technology Program \(ATP\)](http://www.atp.nist.gov) <http://www.atp.nist.gov> of the Department of Commerce and the National Institute of Standards and Technology. ATP uses partnerships with the private sector in early-stage investment, and aims at accelerating the development of innovative technologies that promise significant commercial payoffs.

The **Small Business Innovative Research (SBIR) and Small Business Technology Transfer (SBTT)** programs were passed by Congress to increase small-business participation in federal R&D and technology commercialization. Information about SBIR and SBTT opportunities can be found on the sites of participating agencies, including the [Small Business Administration](http://www.sbaonline.sba.gov/SBIR) <http://www.sbaonline.sba.gov/SBIR>, the [Department of Energy](http://sbir.er.doe.gov/sbir/) <http://sbir.er.doe.gov/sbir/>, and [NASA](http://sbir.gsfc.nasa.gov) <http://sbir.gsfc.nasa.gov>. Many small clean energy companies, after they work with the DOE and NREL, pursue and are successful in obtaining sponsorship by the ATP or SBIR.

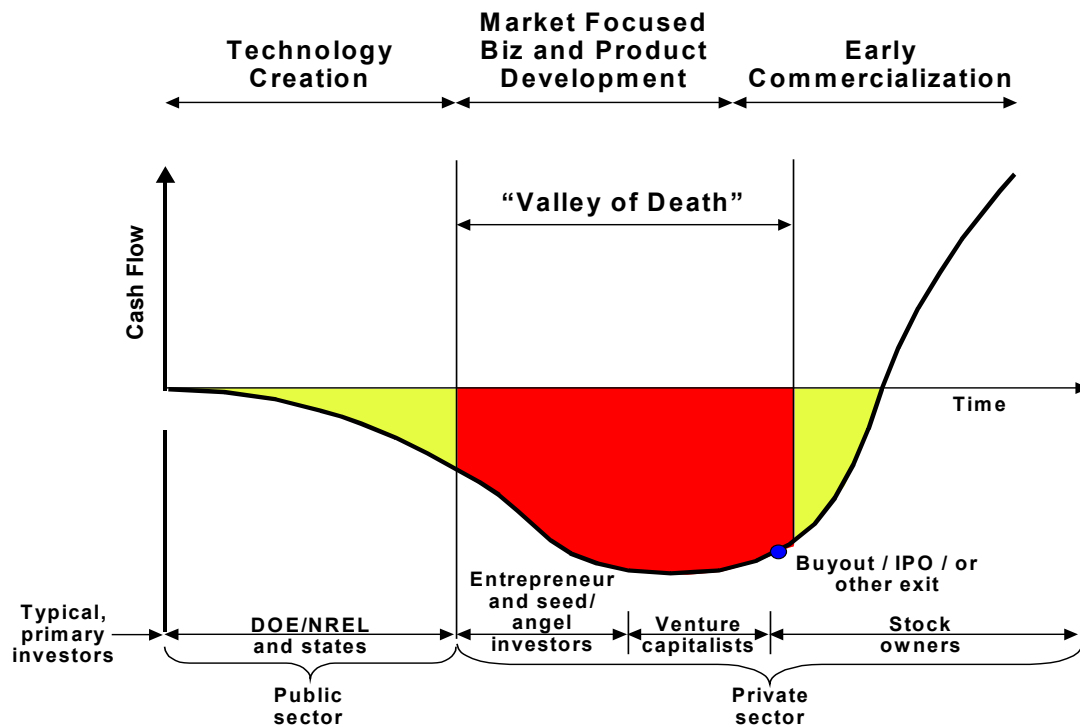
There are often parallel types of mechanisms within the states. An excellent source for a whole range of state incentives can be found at the Web site [National Database of State Incentives for Renewable Energy \(DSIRE\)](http://www.dsireusa.org) <http://www.dsireusa.org>.

Appendix – E: The “Valley of Death”

One obvious and typical difficulty, especially in the early development stages of a start-up technology business, is the negative cash flow regime as shown in Figure 1, Page 4, and as provided for discussion purposes in Figure E-1, below. Correspondingly, some call these early stages the “valley of death.” This negative cash flow occurs because the investment needed for the development of the technical and nontechnical elements of the business exceeds the income from the company’s operations (sales of products and/or services). Cash flow is a particularly large problem where a large capital investment (requiring significant external financing) is needed to develop manufacturing and distribution, as they typically are in high-technology ventures. Hence, in this “valley,” equity financing will be needed for many clean energy companies, because these companies have very limited capability to service debt.

Technology Creation

In the very early stages of the “valley of death” – the technology creation stage – the enterprise must focus on concept development and R&D. Ideally, during this stage, a promising technology – linked to a real market need – is developed. Technical feasibility and initial commercial feasibility, along with a plan for taking it forward, are developed here. Also, interest in and endorsement of the technology by key user groups should be established toward the end of this stage. This is where both technical and market risks are the highest and where private-sector funding is most difficult to obtain. Fortunately, public-sector financing²³ (e.g. through the NREL/DOE in the case of clean energy technology) often provides the valuable, even crucial, support that is needed. Also, personal savings, family and friends, and other bootstrapping (explained below) is generally needed for seed funding of the enterprise.



²³ Government agencies, such as DOE and other related agencies, have a critical role in supporting the creation of enabling technologies through new and existing enterprises.

Figure E-1: Valley of Death – Showing Cash Flow for an Entrepreneurial Venture as a Function of Time and Development Stage of Start-up Business

In the case of DOE/NREL, the value of the public support goes beyond support for the creation of more innovative technologies than would otherwise occur, as well as the “certification value” that is important to investors. By fostering the leverage of the technical capabilities within the national laboratories through the collaborative R&D and by stimulating the diffusion of knowledge, it provides credibility for the entrepreneur and venture to investors.

As valuable as this initial public-sector investment is, an even bigger, and more complex, problem exists in the next stage – the market-focused business-creation stage. The entrepreneur not only must mobilize the resources needed for demonstrating the technology, he/she must do so with a different group of financiers having different perspectives and requirements than in the technology-creation stage.

Market-Focused Business Creation: This next stage of *market-focused business-creation* requires the maturation of a balanced commercial enterprise. Ideally, this stage includes effectively and simultaneously addressing many of the nontechnical issues such as marketing and distribution. It also will include additional product and manufacturing development to arrive at an attractive, market-ready product or process. A strong customer base must be identified and cultivated, strategic partnerships developed, and a well-rounded management team should be in place by the end of this stage. Investments, which can often be 10 (or more) times greater than what was required in the technology-creation stage, are often needed to bring a technology to the marketplace, and to move the business into the *Early Commercialization* stage of business development. Hence, not only are the business formation challenges more diverse, complicated, and difficult, but obtaining the needed financing also can be much more challenging.²⁴

In getting the needed market-equity financing, the challenge is to create significantly greater value – and perception of this value – in the eyes of the investor and the market. And, this much greater value must be created at a time when it is “bleeding” cash most profusely. Further, this investment must largely come from the private sector, mostly in form of equity financing. In the initial phases of this stage, angels, seed-funding organizations, and early-stage venture capitalists are most accessible to the entrepreneur; in the later phases of this stage, venture capital and investment banking become increasingly important.

The level of equity investment attainable will be based on valuation of the business (including the technology and the intellectual property, the value of which is context driven). The amount of equity given up by the founding owners, and the amount of money provided by the investor(s), will be in direct proportion to the present value of the enterprise, including the estimated stream of anticipated future free cash flows. Also, it will be strongly dependent on the perception of risk as seen by the equity investor. Though straightforward in concept, business valuation (see Harvard Business School, September 1998) can be quite contentious because judgment must be applied in many areas, including, for example, opportunity cost of capital, risk premiums, and anticipated market size and share.²⁵

Moreover, to the extent that an investor contributes to creating more value in the business, he/she will claim a larger part of the business equity to compensate for “business development” services, as well as the additional risk that may be perceived. Hence, there is strong motivation for a start-up business to develop and assemble as much of the commercial business as they

²⁴ This is a classic chicken-and-egg conundrum since the robustness of the business depends on getting the needed resources to make it so.

²⁵ See also Nesheim (1997).

can, and delay equity financing until it is absolutely needed, to preserve as much equity as possible for the entrepreneur. When equity financing is sought, it should be significant and sufficient to catapult the organization successfully into the *Early Commercialization* stage.

Appendix - F: More on Project Finance

Companies are increasingly using *project finance* (see Harvard Business School, March 2000)²⁶ to fund and manage programs with large-scale capital expenditures. An illustrative example we discuss in this section is the \$1 billion BP-Forties Field Project. The private-sector project finance investment level was estimated at \$96 billion in 1998. Project finance was the vehicle of choice for financing U.S. power plants in the late 1970s. Under the Public Utility Regulatory Policy Act (PURPA) of 1978, local utilities were required to purchase all of the output from qualified power producers under long-term contracts. Thus, the need to finance new power plants with long-term power purchase agreements created a natural application for project finance.

While there are several variations on the definition of project finance, especially as it relates to the structure and size of the projects, this discussion will focus on the classic large industrial power plant type of project. Project finance has several characteristics that distinguish it from other types of financing arrangements. First, a company (“sponsor” or “parent”) sets up a separate legal entity, which owns large illiquid, single-use industrial assets such as power plants. The separate legal entity is formed specifically to develop, manage, and finance the project and is financed with large amounts of debt. This legal structure is intended to give creditors recourse only to the project’s assets and cash flow but not to the parent company, making the creditors share in the risk of the project. The parent company initially may accept some risk, but eventually there will be no recourse to the parent, once the project is “up and running.” For example, an oil company may guarantee that a reserve will be developed and begin producing, but provide no guarantee that the reserve will be sufficient to service the loan. Thus, the financing of the project is off-balance sheet, meaning that none of the debt is recorded on the parent company’s books.

An example of project finance, BP’s Forties Field in the North Sea, is shown in Figure F-1, next page. In 1972, British Petroleum (BP) used project financing to pay for the development of its Forties Field in the North Sea. As BP wanted to separate the financing of the project from the rest of the company, it created a new entity called Norex, which obtained a loan for \$945 million from a syndicate of 66 banks. Norex paid the money to BP Development, which was responsible for developing the Forties Field. Norex’s payment was an advance payment for future deliveries of oil. Additionally, BP Trading promised to purchase the oil at a prescribed price. These agreements with other BP entities served as a substitute for BP’s guarantee on the debt repayment, effectively transferring some of the risk to the banks.

The banks made a loan to Norex, which then made an advance payment to BP Development for future deliveries of oil. This oil was resold to BP Trading at an agreed-on price. The payments by BP Trading allowed Norex to repay the banks. The heavy arrows in Figure F-1 show how the banks provided financing; the lighter arrows show how BP repaid the banks.

²⁶ Also, for extensive information on project finance research, data, and information resources (including Web sites), see Harvard Business School (October 2000).

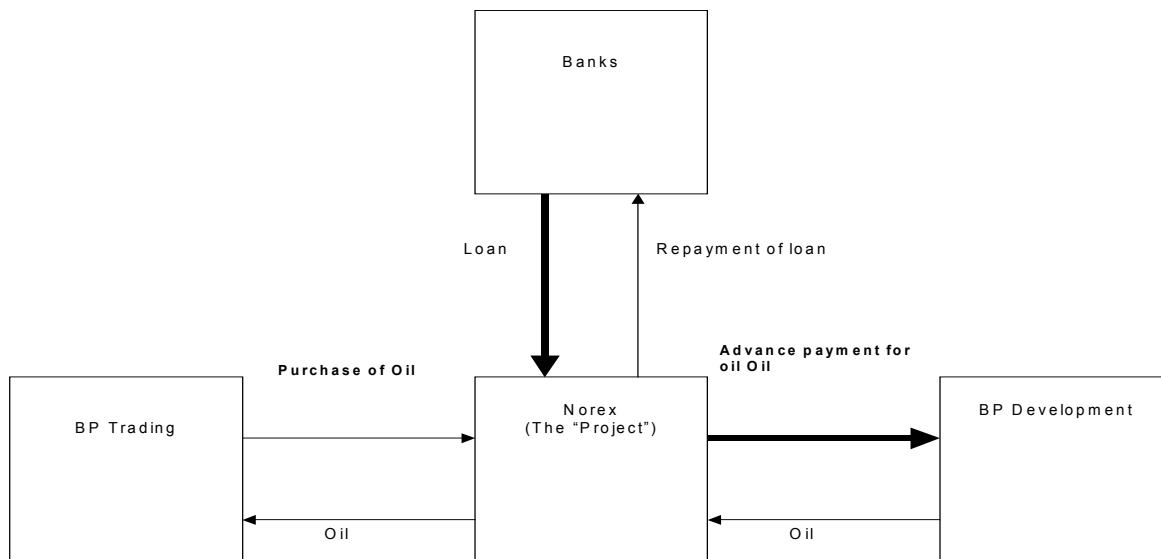


Figure F-1. Financing for the Forties Field project

Projects are categorized as one of two types, either stock-type or flow-type. Stock-type projects are involved in the extraction of resources, which are sold, with common examples being copper-mining operations and oil-drilling operations. Projects where the use of the assets provides a cash flow, with which creditors and investors are compensated, are called flow-type projects. Highways, pipelines, power plants, and telecom systems are all examples of flow-type project finance.

Because projects are structured as stand-alone entities, lenders do not have recourse to the sponsoring entity in the event of default. Despite the nonrecourse nature of project borrowing, projects are highly leveraged entities: debt to total capitalization ratios average 60-70%, but can reach as high as 95% in some deals. These levels are much higher than a typical corporation can achieve, due largely to the nature of the assets and cash flows. With assets that will not face sudden obsolescence, but rather provide a predictable stream of cash flows to debt holders, the acceptable leverage ratios of the projects rise significantly. Additionally, the combination of lowering the probability of default – and lowering the actual costs of default – facilitates the use of high leverage. High leverage, in turn, may be used to create further value by increasing interest tax shields associated with higher interest payments.

As stand-alone entities, projects are fairly transparent in nature, making it relatively easy for creditors to assess the financial nature of the project and monitor construction and development. With segregated cash flows and dedicated management, there is little room for the kind of intentional or judgmental misrepresentation that is possible with diversified or consolidated firms. These improvements in transparency can lower a project's cost of capital. Therefore, properly structured deals can lead to superior financial execution and greater value creation.

Project finance has several other advantages. Etsy (1999) argues that in the right settings, project finance allows firms to minimize the net costs associated with market imperfections such

as transactions costs, asymmetric information, incentive conflicts, financial distress, and taxes. Project finance reduces incentive conflicts. For example, through the use of high leverage and creation of a stand-alone entity, the equity holders are concentrated (and management has a single entity to direct), bringing the objectives of the stakeholders into closer alignment. Thus, one of the most important reasons for using project finance is to limit the costs imposed by these conflicts.

The creation of an independent economic entity allows projects to obtain tax benefits that are not otherwise available to their sponsors. Tax-rate reductions and tax holidays are fairly common in project-finance deals and illustrate how sponsors can capture some of the social benefits created by their project.

Negotiating the deal structure, including the financial, construction, and operational contracts, is extremely time-consuming and expensive. It is, in fact, the biggest disadvantage of using project finance.

Appendix - G: Public-Sector Role in Creating Financeable Companies

Public-sector sponsors also can play a significant role in aligning the public and private financing tracks to better enable early-stage enterprises in the transition to private-sector financing. Even within the constraints, the public-sector organizations and program managers have some discretion on how they manage and administer programs within their purview. Organizations can assist entrepreneurs by encouraging and fostering savvy business behaviors and characteristics in companies they fund. Below are some suggestions on how successful entrepreneurial companies with mature technologies can move out of the government sphere and into the realm of private financing. The first three suggestions are a restatement of the issues addressed in the main body of the report, but are directed specifically at public-sector sponsors. The last three are preliminary suggestions that are based on an initial analysis of the public-sector issues, related to this transition process as described by a wide range of stakeholders. A much more detailed and complete picture of how the public sector can assist in this transition is planned for a later report.

- 1. Become Familiar with the Financial Community.** The best way for public-sector technology sponsors to help entrepreneurs prepare for a transition to private-sector financing is to familiarize themselves with the financial community, particularly energy technology investors. Program managers should:
 - Discover who the main financial players are in their technology area and begin a dialogue with them. A good way to find them is through the Clean Energy Investor Directory <http://www.nrel.gov/technologytransfer/entrepreneurs/directory.html>
 - Invite active financiers to attend key program planning and stakeholder meetings to provide input and ideas. This may help align program R&D goals with market imperatives. Also, the more familiar a financier feels with your technology, the more likely they are to invest.
 - Attend energy-focused venture forums to gain a better understanding of the financing process and what venture capitalists are looking for in an investment opportunity. Moreover, managers can participate and/or encourage their technology partners to participate in the clean energy incubator programs, Industry Growth Forums, and other venues that foster interaction with the financial community. This activity can play an important role in helping more mature technology partners make the leap into private-sector funding.
- 2. Encourage Entrepreneurs to Take Advantage of the Many Business Development Services Offered by State, Local, and Federal Government.** Entrepreneurs should not only become financially aware, they should educate themselves on what it takes to operate a successful business. There is a plethora of free and/or inexpensive services offered by local and state economic development agencies, the Small Business Administration, local colleges, and entrepreneurial organizations. The National Alliance of Clean Energy Business Incubators can provide valuable business development and mentoring services to fledgling companies. Incubators also can improve the yield of the investment by the public sector, and thus provide good stewardship for their technology investments (Murphy, 2000). Also, with the growth of the Internet, hundreds of sites have been developed that provide assistance on human resource issues, operations, business-plan development, etc.
- 3. Foster Market Awareness.** In the rush to perfect an exciting technology, do not let the entrepreneur lose site of market trends and developments. If the firm fails to make it to the marketplace, all their careful research and technology development will be of limited value. Require the entrepreneur to follow a parallel path of technology development and

business development, which includes congruent sets of milestones for both paths. Encourage young companies to seek business and marketing advice from business incubators, energy-focused venture firms, or other reputable sources. These sources also can be used to evaluate and help develop market-driven milestones. Subsequent government awards could be tied to progress along a set of technology and business milestones.

4. **Allow Freedom and Flexibility.** Entrepreneurs should be encouraged to respond to market opportunities in a timely fashion. Program managers are often inhibited by legislative mandates; but to the extent possible, give entrepreneurs the freedom and flexibility to move in the direction of best market opportunities. Equally as important, take care to not drive the technology down a market path that is inconsistent with the market entry needs that the entrepreneur must define and focus on.
5. **Examine Funding Requirements.** When administering technology development programs, take a broad look at the needs of the entrepreneurial company. It's important to let the enterprise develop evenly. Try to assure that technology-focused funding requirements, such as cost sharing, do not hinder or detract from business development. Each business must pursue business development activities, such as developing markets and distribution channels, in addition to technology-focused R&D. If possible, managers should not require that all cost-shared funds be focused on technology issues. There are other ways partners can show strong commitment to the commercialization process, such as a vigorous market development effort or involvement in a business incubator. And finally, realize that *funding for technology development alone* will not properly prepare a company to qualify for seed funding unless key business development gaps have been addressed.
6. **Manage to Business Milestones.** Also take a hard look at how multiple awards are made and consider requiring progress on a set of business development milestones before future awards are made. The milestones might be established in concert with the financial community, and progress might be measured by acceptance into a good incubator, or possibly the evaluation of business plans by alliance incubators.

Appendix H

Tips for Presenting to the Financial and Venture Capital Community

Courtesy of Jim Robbins
The Environmental Business Cluster in San Jose, California

Essential elements of presentation

- Team – Who you are
 - What is the relevant experience of your management team in business start-ups and in the markets you intend to serve?
- Business Model – Be succinct and be clear
- Market – Describe potential and basis for estimate
- Technology – Describe it, but don't spend too much time on it (have a specific product or service in mind for its use)
- Competition – There is some! Describe competition and competitive advantage
- Financial Perspective – What you are trying to grow and what success looks like
- Customers – Who will buy your product and why
- Request – How much do you need and what will you do with the funds
 - Don't underestimate your company's financial needs.
 - How will it be repaid, exit strategy, and what ROI will you be offering an investor?

Common mistakes

- Reading slides/presentation materials – use for reference point only
- Spending too much time on technology – remember to talk about the business
- Using too many buzzwords
- Spending too little time discussing team qualifications – make them interested in you

People forget to:

- Capture the business essence – do this in one sentence
- Identify the problem you solve – make it a business, not a technical problem, and provide an example
- Describe return on investment – to the customer and the investor. Investors like to see five to 10 times return to customer
- Talk about the customer – not just actual, but potential – give an example
- Talk about the competition – investors would rather have an identifiable competitor than a model built on changing market behavior
- Say why they are a good investment
- Use their response to a question to get in key points that you didn't have time to cover in the presentation
- Prepare for questions testing your market understanding

Appendix I Business Plan Basics

Courtesy of the Rensselaer Incubator Program (RPI)

Whether for attracting investment capital; negotiating partnerships and mergers; or simply working to define organizational structures, standards, and goals; the business plan serves as a fundamental management tool for any new and developing venture.

At its essence, the business plan is a marketing tool. A well-drafted plan will educate and interest its audience in a particular business and its product, serving as a resource for investors, partners, customers, and employees. The business plan should allow the reader to quickly and with minimal effort understand what it is the company does, to whom it will sell its product, and how and on what scale it will achieve its goals.

Outline

While there is no “right” business plan, and “one-size-fits-all” templates should be avoided, there do exist certain minimal core components that should be considered.

- Executive Summary
- The Company
- The Product
- The Market and Competition
- Management Team
- Operational Plan
- Financial Plan
- Appendixes

Executive Summary

The executive summary is perhaps the single most important component of the business plan. The executive summary provides the reader with his first impression of the business and will often determine whether he/she wishes to continue learning about the company or turn his attention elsewhere

The executive summary should encapsulate in a thorough, yet concise, format all of the major components of the business plan, including descriptions of the company, its product, the market and opportunity, and operational and financial requirements. Ideally, the executive summary should be no more than two pages.

The Company

This section should include a brief overview of the company in terms of its origins, current status, mission, strengths and weaknesses, and management. It is important to let the reader understand at the outset which direction and to what ends the company plans to develop. After reading this section, one should be able to answer the following questions:

- Who owns and operates the company?
- What does the company do? What does it hope to do?
- Is the proposed business a continuation of previous developments or is the company moving into new territory?
- What factors will enable the company to achieve its goals?

The Product

It is critical that the explanation of the product be informative and thorough while being general enough so as not to lose the reader or disclose sensitive or proprietary information. A common pitfall of entrepreneurs who have lived and breathed their business concept for months (if not years) is to over-explain their product and, in doing so, turn off their audience. Investors, in particular, are weary of businesses that seem “in love” with their product or technology. The

entrepreneur must try to step back from his or her business and try to re-envision it through the eyes of someone being introduced to the concept for the first time. The reader should come away from the product section of the plan with a clear understanding of what the company makes or provides and must fully see the value of such a product or service.

Market and Competition

Once the reader understands and hopefully appreciates what the company will sell, the plan must then work to convince him or her that there exists not only a viable market for the product but also that consumers will choose this product over that of the competition. Investors will look to see that the management team clearly understands the real potential for selling its product. A well-formulated market and competition section will demonstrate that the business leaders understand the value of being market-driven rather than product-driven.

A common turnoff is an assessment that concludes that there is no competition. No matter how unique or novel the product, there is always competition. In the age-old analogy, even before the days of GM and Chrysler, Henry Ford faced competition in the form of the train, the horse, and the carriage.

Another red flag in a market analysis is a grossly oversimplified, broad, and naive description of the potential market. As an example, a company designing a new type of sports shoe might state that the market for its product consists of 270 million people nationwide who spend an average of \$100/person per year on shoes – so, therefore, there exists a \$27 billion market. Thus, even if the company only captures 1% of the market within three years, there exists a revenue potential of \$270 million. In actual fact, the company's product is a waterproof, lightweight, high-impact running shoe that would best attract 20- to 37-year-old X-treme sport enthusiasts who actually represent about 2 million people - primarily on the West Coast and suburban New England.

Management

Investing in a start-up company is a risky endeavor, and the capital-hungry entrepreneur must always be conscious of presenting his or her business plan in ways that reduce a potential investor's perception of risk. Having a product reduces risk. Having customers who have experienced and can attest to the strengths of a product (and the company that provides it) also serves to reduce risk.

Another key factor for a potential investor in weighing risk is the depth and experience of a new venture's management team. While a description of the management and organizational structure within the company is a basic business plan requirement, a successful plan will hopefully also demonstrate that:

- the management team boasts the expertise and experience needed in moving the company forward
- or that if any holes exist, the company is well aware of their management shortcomings and has considered ways of addressing them.
- the company has a clear leader and that management positions are well defined in terms of duties and responsibilities.
- a board of directors has been organized, which further augments the management team by bringing in needed expertise. Choose your board carefully, considering what types of skill sets or experiences your company could benefit from the most.

Operation

Once you've explained where you want the business to go, you must now show how you will get there. A timeline with clear milestones is a good way to describe your company's projected development. Make sure to include not just what you hope to do, but what needs to be

achieved along each step of the way to meet your final goals. Include, where applicable, subsections on:

- R&D
- Product Testing
- Manufacturing
- Marketing
- Distribution
- Facility Needs
- Personnel Needs
- Inventory Needs
- Capital Needs
- Quality Control
- Inventory Control

Financials

Include, if possible, past performance and future projections (four to five years). Avoid volumes and volumes of figures in various spreadsheets. Be thorough while remaining clear. Try to gauge your projected revenues and profit margins against industry standards. Make sure you provide reasonable explanations for any forecasted numbers

Appendix

Information in the appendices can be used to strengthen your overall plan while reducing the volume of material within the core business plan sections. Include any of the following in the appendices as appropriate.

- resumes
- articles about the company or product
- market-data sources
- samples of advertising
- letters of referral or customer satisfaction
- patents
- anything else that strengthens your business-plan case

Business Plan Executive Summary Format

Name of Company

Business Company is in

Present or Proposed Capital Raised (if any) and Terms (if any)

Overview of the market sector targeted (define all jargon, and explain clearly to someone not skilled in the art)

- current technology and problems with it
- what is the market looking for to solve its problem
- size of market in terms of sales/year geographically

Company's current product or service

- how does the product solve the problem and is this an incremental or strategic solution
- is there any IP protection
- how long for any competitor to match or exceed your solution
- who is, or could be, competition
- is product enough of a perceived benefit for targeted market to buy or switch (both technically and economically)
- sources of each revenue stream and percent of total
- prices and gross product of each product/service
- volume of sales for Year 1 and Year 2
- status of product development
- regulatory hurdles, if any, and status
- follow on products, services

Risks - what are the worst possible problems, outcomes

Marketing Strategy (target market, percent penetration Year 1 and Year 2, channels of distribution, percent of capital allocated to marketing, confirmed sales, letters of intent, if any)

Strategic Partners, if any

Management - be brief

Board of directors - be brief

Financial Data

- prior tranches (raises) and details
- burn rate
- revenue, gross revenue, and EBITA Y1 and Y2 only (assumptions in body of plan)

Exit Strategies

Corporate Data

- state and date of incorporation
- address of main office
- telephone and fax
- email of CEO or main contact
- URL of company Web site

All this in two to three pages. Be confident, positive, clear, and candid – but don't hype. Put detailed backup in main body of plan.

Business Plan General Tips

Make sure your plan is product-focused (as opposed to technology-focused) while centering around how and to whom your product will be sold. The product makes the sale, the market closes the deal, and the management team sets the terms.

There must be a clear exit strategy for investors. Investors are not providing the company with money because they like you or the business. They simply want a return on their money.

Typically, due to the risky nature of such early stage investments, a venture capitalist is looking for a 30 percent – 40 percent return on investment per year for a five-year period. Thus, if your business is estimated to have a \$20 million value after five years, an initial \$2 million investment would require surrendering of 45 percent – 50 percent of the business.

Understand who your potential investor is. You want to pitch to an investor who typically makes the kind of investments your company is seeking. Funds that provide \$500,000 investments will not be able to finance your company if you are looking for \$5 million, just as large funds that make \$10 million plus investments will not be interested in amounts below their overhead cost thresholds. You also want to attract investors who have some knowledge and experience in your industry. VCs will (hopefully) invest in what they know, and your business will benefit from not simply the capital but also from the management help, connections, and clout that a good match investor can bring.

If you don't state your investment needs in the business plan, certainly be prepared and be confident to answer the question if asked. Also know how to answer the question, "You say your business needs \$2 million. What would you do with \$5 million?"

Raise money at points of maximum value. Raising money too early (when your company has a lower worth) means giving up too much equity. Try to time financing for periods just after, rather than just before, major milestones.

Do not expect a VC to sign a nondisclosure agreement (NDA). Most worth their salt won't anyway, and you may simply turn them off. If you are worried about proprietary information, remember that, basically, ideas are cheap - it is not so much what you do as how (and who) will do it. Also, VCs are not entrepreneurs and are not likely to "take your idea and run with it." You may, though, want to check first into whether an investor is involved with any of your current or potential competition. Numbering and tracking the copies of your business plans is another way to protect its confidentiality. Request that plans that do not result in funding be returned.

Numbering copies also pleases the VC who will want to know that only a limited number of business plans have been distributed.

Remember that the quality of a business plan is often inversely proportionate to its length. There is no standard number of pages that you should aim to fill, though somewhere between 20 and 40 pages is common. It is much more important to say what is needed and do it in a succinct and concise manner. A business plan that is too verbose or muddled will lose its audience. Separate extraneous documents and information (management resumes, newspaper articles, patents, etc) and include them in the appendices.