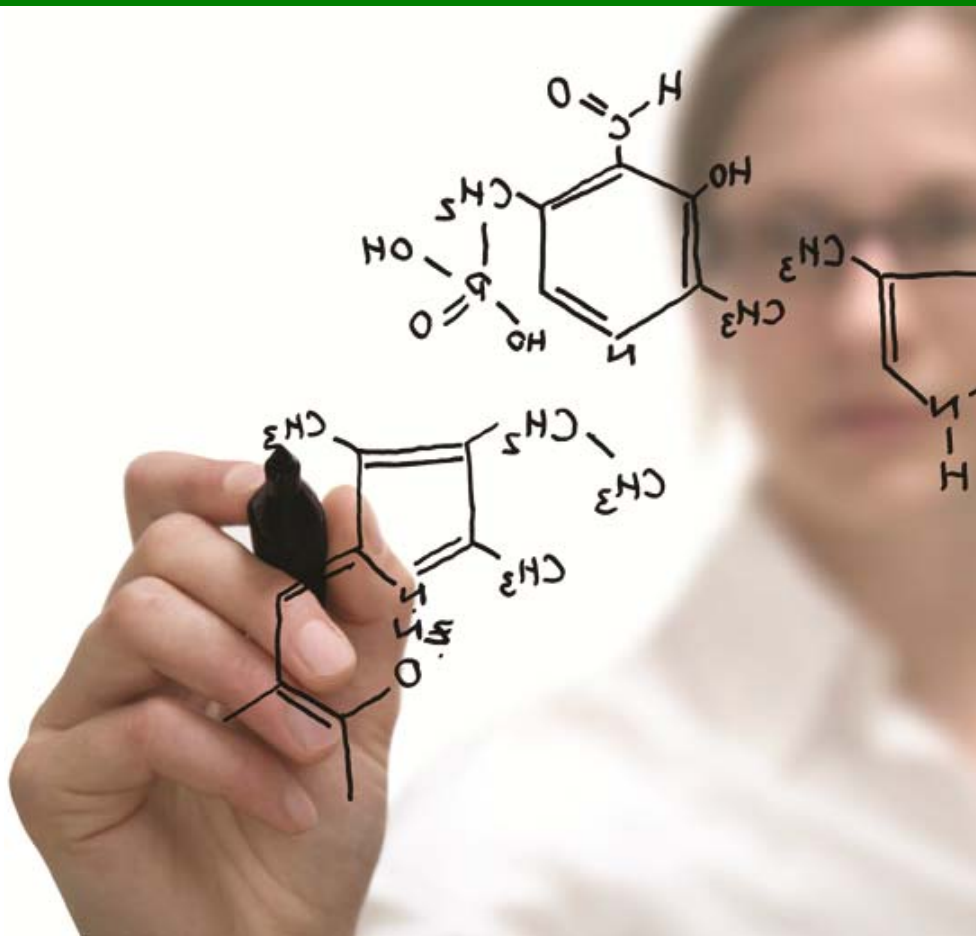




Nevada Institute for Renewable  
Energy Commercialization

*Transforming Clean Energy Ideas into Sustainable Enterprises*



2010 Request for Proposals  
Application Guide

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June 2010

*Dear Prospective Applicant:*

*Thank you for your interest in the Nevada Institute for Renewable Energy Commercialization (NIREC) and the 2010 Request for Proposals (RFP). NIREC is a 501(c)3 nonprofit organization dedicated to accelerating the commercialization of clean energy solutions. NIREC accomplishes its innovation mission by providing the vital combination of funding, business expertise and collaborative networks to validate the technology, evaluate the commercial potential of the customer proposition and achieve market entry.*

*The primary goal of NIREC's funding and venture assistance is to significantly increase the probability that new renewable energy or energy efficiency concepts will be developed into technologies and products widely deployed in the market. Specifically, NIREC's Entrepreneur-in-Residence (EIR) Program is focused on helping early-stage technologies and companies achieve the next funding milestone and other critical pre-commercialization deliverables.*

*To date, NIREC has launched three previous RFPs and has funded proposals submitted by our Research Partners and by two early-stage companies. NIREC has awarded funding and services to 23% of the applicants to the first RFP (launched summer 2008), and 17% of the applicants responding to the second RFP (launched spring 2009). In the third RFP (launched fall 2009), NIREC expects to fund approximately 12% of the applicants.*

*In this RFP round, NIREC is offering two award tracks:*

- *a Research Partner Track and*
- *a U.S.-based Early-Stage Company Track.*

*Information on track eligibility and requirements can be found in Section A: Proposal Track Eligibility and Requirements.*

*In each of these tracks, NIREC provides funding and pre-commercialization services worth up to \$150,000. Work is expected to be completed within one year and should be comprised of the following project scope elements.*

*Applicant Budget (maximum \$100,000)*

- *Research Partner Track: Up to 100% of budget for technology development (there is no minimum budget requirement for pre-commercialization activities)*
- *U.S.-based Early-Stage Company Track: a maximum of 75% of applicant budget (up to \$75,000 maximum) for technology development, and a minimum of 25% of applicant budget for pre-commercialization activities*

*Services Provided by NIREC*

- *an additional \$50,000 in business planning assistance performed by NIREC and NIREC's pre-commercialization partners*

*(See Section E: Structure of Award).*

*An integral part of NIREC's business planning assistance is the appointment of an EIR, an experienced business executive who guides the project team through the process of developing and stress-testing a commercialization roadmap. While the cash awarded for technology development is certainly critical to advancing the idea, NIREC principal investigators have typically found the business planning engagement with their EIRs to be the most unique and rewarding aspect of their NIREC experience. In addition, project teams gain access to NIREC's broad network of key collaborators/influencers in the national clean energy space and are able to leverage NIREC's expertise in raising additional public and private funds. More information on the EIR Program's deliverables can be found in Section D: Entrepreneur-in-Residence (EIR) Program Expectations.*

*The process of technology commercialization is arduous. It requires significant dedication, a willingness to step out of one's comfort zone, and an ability to work with myriad stakeholders to achieve desired business outcomes. In short, technology commercialization is not for everyone. If you aspire to license your technology or start a company, and are willing to commit the time and energy to leverage NIREC's investment and ongoing guidance to drive the commercialization process, you are encouraged to respond to this RFP.*

*Access to NIREC's resources is extremely valuable to technologists, especially at such a high-risk, early phase of technology development. Not only does NIREC not require cost sharing, it does not charge program fees and, in fact, continues to play an advisory role and provide support in the on-going commercialization process beyond the initial investment time period.. To ensure NIREC can continue to provide valuable funding and services, NIREC expects to share in the success of the businesses it helps cultivate. More information on NIREC's funding instrument can be found in Section E: Structure of Award.*

*This document provides information on the application process, required application documents and evaluation criteria of this RFP. Interested applicants should plan to:*

- *submit a Pre-Proposal by **Tuesday, September 14, 2010, 2:00pm PDT,***
- *submit a Project Proposal by **Tuesday, October 5, 2010, 2:00pm PDT.***

*Questions regarding this RFP should be directed to NIREC via email to: [rfp@nirec.org](mailto:rfp@nirec.org).*

*Additional information and responses to questions will be posted on the NIREC website at: [www.nirec.org/rfp2010.html](http://www.nirec.org/rfp2010.html)*

*We look forward to working with you to position your clean energy technology for commercial success.*

*- The NIREC Team*

## A. Proposal Track Eligibility and Requirements

NIREC's 2010 Request for Proposals is seeking proposals for renewable energy and energy efficiency technologies along two award tracks: Research Partner Track and U.S.-based Early-Stage Company Track.

### 1. Research Partner Track

NIREC has developed research collaborations with a number of research institutions. The Research Partner Track is open to all faculty, students and staff of NIREC's research partners:

- Desert Research Institute
- University of Nevada, Las Vegas
- University of Nevada, Reno
- University of California, Davis

Collaboration among NIREC's Research Partners is highly encouraged and will be considered favorably during proposal evaluation.

Projects are required to reach at least Technology Readiness Level (TRL)-4 by the completion of the NIREC-awarded funding term. See *Appendix 2: Technology Readiness Levels*.

### 2. U.S.-based Early-Stage Company Track

The Early-Stage Company Track is open to all pre-seed companies registered in the United States, that propose to perform the project in conjunction with a Nevada entity. This could take the form of:

- a portion of the scope of work performed by the University of Nevada, Reno; the University of Nevada, Las Vegas; or DRI
- a portion of the scope of work performed by a private company with operations based primarily in Nevada
- a physical presence set up by the pre-seed company in Nevada to perform all or a portion of the scope of work

This track is limited to "pre-seed" companies only. For purposes of this RFP, a pre-seed company is defined as one that has not received outside private investment from angel investors, venture capital or private equity companies and normally, has not yet achieved profitability

NIREC encourages you to contact the directors of the eligible research institutes to discuss collaboration opportunities:

- Renewable Energy Center  
DRI  
([www.dri.edu/rec](http://www.dri.edu/rec))  
Dr. S. Kent Hoekman  
[Kent.Hoekman@dri.edu](mailto:Kent.Hoekman@dri.edu)  
(775) 674-7065
- Renewable Energy Center  
University of Nevada, Reno  
([www.unr.edu/energy/](http://www.unr.edu/energy/))  
Dr. Manoranjan Misra  
[Director.REC@unr.edu](mailto:Director.REC@unr.edu)  
(775) 784-1603
- Harry Reid Center for  
Environmental Studies  
University of Nevada, Las Vegas  
([hrc.nevada.edu](http://hrc.nevada.edu))  
Dr. Oliver Hemmers  
[hemmers@unlv.nevada.edu](mailto:hemmers@unlv.nevada.edu)  
(702) 895-3742

Preference will be given to projects that have a meaningful scope performed in Nevada and/or that demonstrate favorable future economic impact on the state of Nevada. While there is no specific percentage of work requirement in this respect, you should strive to dedicate at least 20% of the technology development budget to scope of work performed in Nevada. There are numerous benefits to establishing a Nevada corporation and/or conducting business activities within Nevada. See *Appendix 1: Conducting Business in Nevada*.

This track specifically seeks proposals from for-profit companies seeking to create or expand viable, sustainable business opportunities with near-term job creation—three years or less post-NIREC award. As such, projects are expected to reach at least Technology Readiness Level (TRL)-5 by the completion of the NIREC-awarded funding term. See *Appendix 2: Technology Readiness Levels*.

## **B. RFP Process Overview**

The RFP process provides a structured methodology for submitting proposals for review by NIREC.

Initially, a *Pre-Proposal* is required in response to the RFP. Shortly thereafter, full proposals are submitted to NIREC's Technology Commercialization Advisory Board (TCAB) for review and assessment. Full application documents will be available online at <http://www.nirec.org/rfp2010.html> from Tuesday, August 3, 2010. Full proposals submitted without a prior *Pre-Proposal* will not be accepted.

The TCAB will analyze the technical and commercialization merits of the projects, seeking additional outside expert technical input where necessary. The TCAB will then shortlist a number of proposals invited to participate in a subsequent presentation round.

If a proposal progresses to the presentation round, the principal investigator (or designee) is invited to give an in-person presentation. The presentation typically consists of a 15-minute PowerPoint presentation followed by a question and answer period. Presentations will take place in Reno, Nevada. Associated travel expenses are the responsibility of the applicant under the U.S.-based Early Stage Company Track. NIREC will reimburse associated travel expenses for shortlisted applicants under the Research Partner Track.

Proposals recommended for funding by the TCAB will undergo subsequent due diligence by NIREC management. Final awards are subject to all required approvals by NIREC's sponsors (i.e., U.S. Department of Energy) and NIREC's Board of Trustees. Awards by NIREC are final and are not subject to appeal.

## C. Deadlines

NIREC is offering two separate award tracks: Research Partner Track and U.S.-based Early-Stage Company Track. Both tracks are subject to the following deadlines:

<b>RFP Timeline</b>	
Tuesday August 3	Full application documents available online at <a href="http://www.nirec.org/rfp2010.html">www.nirec.org/rfp2010.html</a>
Tuesday August 24	Last day to submit questions via email to: <a href="mailto:rfp@nirec.org">rfp@nirec.org</a>
Tuesday August 31	Responses to all qualifying questions will be posted on the NIREC website. Applicants are encouraged to check the website for responses ( <a href="http://www.nirec.org/rfp2010.html">www.nirec.org/rfp2010.html</a> ).
<b>Tuesday, September 14 2:00pm PDT</b>	<b>Deadline</b> to submit online at <a href="http://www.nirec.org/rfpupload.html">www.nirec.org/rfpupload.html</a> the following document: <ul style="list-style-type: none"> <li>• Document #1: Pre-Proposal (Word)</li> </ul>
<b>Tuesday, October 5 2:00pm PDT</b>	<b>Deadline</b> to submit full application online at <a href="http://www.nirec.org/rfpupload.html">www.nirec.org/rfpupload.html</a>
Tuesday, December 21	Applicants notified via email whether their proposal has been selected for the presentation round.
Tuesday, January 25	Project presentations in Reno, Nevada. Principal investigators or their representatives are expected to provide a 30-minute, in-person, PowerPoint presentation, followed by a question and answer period.
Tuesday, February 1	Principal investigators notified via email if the proposal submission has advanced to final due diligence round.
March 2011	Final Award Announcements

It is the applicant's sole responsibility to submit proposals in a timely fashion prior to the deadline. NIREC is not responsible for applications that cannot be submitted as a result of website technical difficulties or outages.

Late or incomplete applications will not be accepted. Any change or update to the deadline for proposals will be posted on the NIREC website. Such postings shall constitute constructive notice to the general public and to all applications of any modifications or alterations of the deadline for proposals. Therefore, applicants are encouraged to regularly view the NIREC website at [www.nirec.org/rfp2010.html](http://www.nirec.org/rfp2010.html).

## D. Entrepreneur-in-Residence (EIR) Program Expectations

NIREC's EIR Program is central to the success of all funded projects. It is focused on helping early-stage technologies and companies achieve the next funding milestone and other critical pre-commercialization deliverables. The EIR Program requires effective collaboration between all stakeholders, including the U.S. Department of Energy and other prospective funders, principal investigators, EIRs, TCAB, the NIREC Board of Trustees, and the larger community of research directors, angel groups, venture capitalists and licensing/IP facilitators within NIREC's clean energy innovation ecosystem.

NIREC advocates a strong culture of collaboration, transparency and respect. Commercializing technology is an iterative and challenging process, and award recipients must work closely with EIRs to brainstorm solutions to challenges and to achieve the EIR Program's milestones and pre-commercialization deliverables.

### 1. The Project Team

Each applicant must bring together a team that is committed to achieving applicable EIR Program milestones and deliverables. The team should consist of:

#### Research Institution Team

1. **Principal Investigator:** A faculty, student or staff member who is the technical lead on the project and, typically, the originator of the patent. This individual must commit a minimum of 3 hours per week to pre-commercialization activities. This is in addition to time allocated to oversee/deliver the proposed technical milestones.
2. **Technical Assistant:** A PhD candidate or post-doctoral student with an interest both in validating and commercializing the technology. This individual must commit a minimum of 3 hours per week to pre-commercialization activities. This is in addition to time allocated to oversee/deliver the proposed technical milestones.
3. **Business Analyst:** A business-oriented analyst (e.g., a business school student) responsible for market research and for driving relationship development with relevant partners and customers. This individual must commit a minimum of 8 hours per week to pre-commercialization activities.

#### U.S.-based Early-Stage Company Team

1. **Principal Investigator:** Typically, the CEO of the company. This individual must commit a minimum of 3 hours per week to pre-commercialization activities. This is in addition to time allocated to oversee/deliver the proposed technical milestones.
2. **Technical Lead:** A technical expert on the subject matter who has an interest both in validating and commercializing the technology. This individual must commit a minimum of 3 hours per week to pre-commercialization activities (in addition to work performed to achieve technical milestones). If the CEO is the best candidate as the principal investigator AND technical lead, the CEO has to commit to spending a minimum total of 6 hours per week on pre-commercialization activities.
3. **Business Analyst:** A business-oriented analyst (e.g., business development manager or a business school student) responsible for market research and driving relationship development with relevant partners and customers. This individual must commit a minimum of 8 hours per week to pre-commercialization activities.

## 2. Determining Commercialization Aspirations

Principal investigators and their project teams must commit to achieving the deliverables of a chosen commercialization strategy by the conclusion of the NIREC funding period. Although the final commercialization pathway may be unknown at this time, project teams are asked to identify their aspirations in *Document #2: Project Proposal*. These strategies are as much a reflection of the principal investigator's personal aspirations, as they are of business realities.

<b>Research Institution Principal Investigator Aspirations</b>	<b>U.S.-based Early-Stage Company Principal Investigator Aspirations</b>
<ul style="list-style-type: none"> <li>• I prefer to remain in academia, and consult for companies that license my technology through the Technology Transfer Office</li> <li>• I aspire to start a company that holds a portfolio of IP containing my technology and that licenses the technology to other companies</li> <li>• I aspire to start a company that eventually sells directly to consumers the products or services developed through the use of my technology</li> </ul>	<ul style="list-style-type: none"> <li>• I prefer my company to hold a portfolio of IP containing the technology that licenses the technology to other companies</li> <li>• I envisage developing a strategic alliance with one or more partner(s) and may license the technology to the partner(s) or create a joint venture with the partner to manufacture or distribute the product</li> <li>• I want to see my company grow to critical mass and eventually sell products or services to customers</li> </ul>

These aspirations, together with market realities, typically lead to the one of the four following commercialization strategies:

### University Licensing

The technology is licensed by the principal investigator's university or research institute directly to a private company. The principal investigator remains with the institution and continues as a researcher and/or faculty member, and serves as a consultant to the private company.

### Company Licensing

The principal investigator starts a spin-out company based upon the technology platform developed with NIREC-awarded funding and support. In many cases, the principal investigator may assume a reduced appointment at his or her university or research institute.

### Strategic Alliance

The principal investigator creates a strategic alliance based on the technology developed with NIREC-awarded funding and support. This type of agreement generally applies when the developed technology is a component technology or enhancement to an existing technology. In a strategic alliance, a company is started and the principal investigator works closely with a partner or partners to develop the product to maturity. The principal investigator may license the technology to the partner or create a joint venture with the partner to manufacture or distribute the product.

### Business Venture

The principal investigator establishes a company with the intention of building the technology to critical mass and selling the end-product or service. This is an "end-to-end" business which typically includes establishing and/or overseeing manufacturing, sales and distribution capabilities within the company.

NIREC acknowledges that certain aspects of the funding application (i.e., *Document #5: Draft Commercialization Roadmap*, and the pre-commercialization activities portion of the budget) require business planning expertise that

you and your team may not currently possess. If chosen for an award by NIREC, the EIR and other NIREC resources are intended to fill that gap. Given these considerations, we recognize that the preliminary commercialization strategies proposed in your application represent best judgment and that successful applicants will finalize their commercialization roadmaps with the support of the EIR and other project team members.

### 3. EIR Program Deliverables

EIRs are carefully selected for projects based on the latter's business and technical needs. The EIR takes a leadership and coordinating role in the implementation of pre-commercialization activities, working in conjunction with NIREC, the principal investigator and the project team to ensure all milestones and deadlines are met. When needed, the EIR may leverage outside technical experts to help the project team work through and determine ways to overcome technical issues and challenges.

NIREC expects the EIR and project team to meet as often as necessary; typically once a week, but no less often than bi-weekly. EIRs typically spend an average of approximately 30 hours per month on pre-commercialization activities.

The following timelines and deliverables relate to project management and commercial aspects of the program, apply to both tracks, and are over and above the technical milestones proposed by the applicant.

#### Month 1: Project Set Up

- **By the end of Month 1**, confirm and agree to technical and commercial milestones. A robust project plan details the following:
  - Meeting and presentation schedules—includes a 6 and 12 month comprehensive review meeting scheduled with NIREC management, company board meetings (if applicable), and advisory board meetings
  - Project and commercialization strategy activities—includes market research, financial modeling and other strategy development
  - Fund raising and partnership building activities—includes development of the funding strategy, identification of funding targets, and visioning “marketing” initiatives
  - Corporate Infrastructure activities—includes setting up the company accounts, developing a plan for advisory board recruitment, and team capability gap analysis
  - Technology development activities —includes development and execution of IP (if applicable)
- Determine likely commercialization strategy
  - University Licensing
  - Company Licensing
  - Strategic Alliance
  - Business Venture

#### First 6 Months

- Determine the value of the business by completing a commercialization roadmap analyzing the:
  - Technology
  - Customers
  - Market
  - Competitors
  - Value of the business or the license
  - Potential licensees (when University Licensing, Company Licensing or Strategic Alliance is goal)
  - Type of partner or arrangement sought
  - Negotiation strategy
  - Three-year financial highlights after completion of NIREC scope of work
- Early-stage companies are expected to complete a more detailed business plan that also includes:
  - Research & Development Plan
  - Manufacturing/Engineering Plan
  - Marketing/Sales Plan
  - Human Resources Plan
  - Contingencies
  - Financial Projections
- If applying under the Research Partner Track and Company Licensing, Strategic Alliance or Business Venture commercialization strategy is chosen:

- Start a C-Corp with Board of Directors and Advisory Board assembled
- Ensure IP is protected
- Negotiate IP agreement with university
- Identify prospective key management team members

#### **Month 6**

- A comprehensive review is conducted and milestones and deliverables are examined in detail. This is a significant checkpoint in the progress of the NIREC-awarded project.

#### **Months 7 through 12**

- Execute imperatives outlined in the business plan
  - For a University Licensing commercialization strategy, the goal is to secure the prospective technology licensee. Project Teams are expected to:
    - Work closely with Technology Transfer Office to ensure IP protection is executed
    - Prepare a presentation to market the IP to potential licensees
    - Begin formal discussions to shortlisted entities/entrepreneurs
    - Work closely with the university, principal investigator and private entity to negotiate and execute a licensing agreement
    - Other example deliverables en route may include:
      - Securing letters of interest from prospective licensees
      - Securing letters of interest from prospective customers of “final product”
  - For a Research Partner committed to executing the Company Licensing, Strategic Alliance or Business Venture, or for U.S.-based Early-Stage Company Track awardees, deliverables are dependent upon the chosen strategy, and will be agreed upon with NIREC, the EIR and the Project Team, with the support of its Advisory Board.

#### **Other Expectations by the End of Month 12**

- Assemble an Advisory Board that is responsible for supporting the development of the business plan.
- Identify and apply for at least 2 funding opportunities (e.g., SBIR/STTR, other federal grants, fee for service R&D or business plan competitions) to further de-risk the technology
- Apply to present business opportunity at relevant investor conferences (e.g., TechConnect Summit, Silver & Gold Venture Capital Conference, etc.)
- Publish articles
- Attend relevant conferences to network and present technical poster sessions
- Actively manage/protect IP

## E. Structure of Award

### 1. Award Budget

NIREC provides \$150,000 for technology development, pre-commercialization activities and business planning services.

The applicant's proposed budget may include up to a maximum of \$100,000, and projects should be no longer than 12 months in duration.

- Research Partner Track: Up to 100% of budget for technology development. Applicants may choose to allocate a portion of the budget to pre-commercialization activities, such as the funding of a business analyst, but there is no minimum budget requirement for such activities.
- U.S.-based Early-Stage Company Track: a maximum of 75% of applicant budget (up to \$75,000 maximum) for technology development, and a minimum of 25% of applicant budget for pre-commercialization activities

Additionally, NIREC provides up to \$50,000 of business planning assistance through the EIR Program (not to be included in the applicant's proposed budget).

#### Technology Research and Development

- Activities typically performed under the proposed budget include technical validation and prototype development activities. The data set from a successful project should have the power to attract: additional financial resources [e.g., Small Business Innovation Research grants / Small Business Technology Transfer programs (SBIR/STTRs) and/or investor funding]; commercialization expertise (e.g., a CEO to start a new company); licensing interest; or other resources that enhance commercialization.
- **No matching funds are required.**
- **DIRECT COSTS:**
  - Direct costs, for the purposes of this RFP, include personnel salaries, fringe benefits, travel, equipment, supplies, other contracts, and consultants (where applicable).
  - Research Partners may include fringe benefits calculated using 2010/11 fringe rates established with federal grantors.
  - U.S.-based Early-Stage Companies may include actual fringe benefits up to a maximum of 25% of the budgeted salaries of full-time employees engaged in the project (subject to NIREC audit).
  - TRAVEL: One trip to Reno for NIREC Project Reviews should be budgeted every three months for the duration of the project. Mileage should be claimed in accordance with IRS rates found at <http://www.irs.gov/taxpros/article/0,,id=156624,00.html>.
- **INDIRECT COSTS:**
  - Research Partners may include indirect costs, calculated by using established 2010/11 indirect cost rates established with federal grantors.
  - U.S.-based Early-Stage Companies may include actual indirect costs up to a maximum of 40% of total direct technology research and development costs (subject to NIREC audit).

#### Pre-Commercialization Activities

- Pre-commercialization activities include intellectual property management, licensing fees, grant writing, conducting market feasibility studies, business development, and company formation and start-up.
- Applicants SHOULD NOT include business planning advisory services in their budget, which will be provided by NIREC in the form of an EIR.
- **No matching funds are required.**
- The Business Analyst (together with an applied fringe rate if applicable) should be budgeted under pre-commercialization activities.

- All other sub-contracted pre-commercialization activities and services (i.e., outside professional services providers such as lawyers and grant proposal reviewers) proposed in the budget will be contracted directly by NIREC upon mutual agreement between NIREC and the applicant.
- Indirect cost should not be applied to pre-commercialization activities since NIREC will be funding these resources directly.

## 2. Funding Instruments

In recognition that NIREC does not pass on any cost-sharing requirements or charge any program fees, and to better ensure that NIREC will be able to continue to provide its program and services to program participants, NIREC expects to share in any disposition as a result of successful commercialization. This may take the form of a royalty in the technology or a nominal 10% equity position in a newly-formed company.

While NIREC has certain standard frameworks that it will apply to capture such benefit, the precise nature and terms of the applicable arrangement will be discussed with award finalists on a case-by-case basis prior to any final award determination.

Successful proposals approved for funding and participation in the NIREC program by NIREC's Board of Trustees are subject to final execution of definitive legal agreements embodying the program's terms and conditions.

## 3. Intellectual Property Provisions

All intellectual property developed during the NIREC engagement shall be owned by the applicant.

Further, as certain NIREC activities are subject to intellectual property rights of its federal government funding agencies [e.g., Department of Energy (DOE)], intellectual property developed as a result of NIREC's investment is subject to the following requirements:

- (a) Recipients of NIREC's investment may copyright any work that is subject to copyright and was developed, or for which ownership was purchased, under an award. DOE reserves a royalty-free, nonexclusive and irrevocable right to reproduce, publish or otherwise use the work for Federal purposes, and to authorize others to do so.
- (b) DOE has the right to:
  - (1) Obtain, reproduce, publish or otherwise use the data first produced under an award; and
  - (2) Authorize others to receive, reproduce, publish, or otherwise use such data for Federal purposes.
- (c) In addition, in response to a Freedom of Information Act (FOIA) request for research data relating to published research findings produced under an award that were used by the Federal Government in developing an agency action that has the force and effect of law, the DOE shall request, and the recipient shall provide, within a reasonable time, the research data so that they can be made available to the public through the procedures established under the FOIA. If the DOE obtains the research data solely in response to a FOIA request, the agency may charge the requester a reasonable fee equaling the full incremental cost of obtaining the research data. This fee should reflect the costs incurred by the agency, the recipient, and applicable subrecipients. This fee is in addition to any fees the agency may assess under the FOIA [5 U.S.C. 552(a)(4)(A)].

## F. Evaluation Criteria

NIREC's Technology Commercialization Advisory Board (TCAB) is comprised of industry and commercialization experts who evaluate proposals based on six criteria areas: market potential, IP potential, team expertise and experience, work plan quality, risk, and Nevada content/economic impact (Early-Stage Company Track) and research partner collaboration (Research Partner Track). Preference is given to proposals with shorter time to market, strong IP positions, established industry and potential customer relationships, and greater collaboration and involvement with entities located within Nevada.

### **Market Potential**

The market potential evaluation analyzes market need, market viability, market leadership, potential commercialization routes and time to market. The technology is considered in relation to potential customers, market size, market acceptance and adoption, investment needs, social or environmental side effects, similar technologies and business models currently in the market, and potential customer or licensee interest in the technology.

### **IP Potential**

The IP potential evaluation analyzes the platform value of the technology and IP protection level. The technology is considered in relation to the technology's potential for multiple product applications and the amount of modification needed to deliver multiple applications, the level of security that has been attained for IP rights and the amount of third-party encumbrance.

### **Team Expertise and Experience**

The team expertise and experience criteria evaluates the members of the team with regard to their technical expertise and experience in commercializing a technology. Preference will be given to project teams who demonstrate an understanding of and commitment to NIREC's expected pre-commercialization deliverables [See Section D: *Entrepreneur-in-Residence (EIR) Program Expectations.*]

### **Work Plan Quality**

The work plan quality criteria evaluates all of the proposal elements, including objectives, milestones, deliverables, schedule and budget, and considers the strength and credibility of the team in establishing a framework for technical and commercial success through the various RFP documents.

### **Risk**

The risk evaluation analyzes both the commercial and technical risk and feasibility of commercializing the technology. Commercial risk takes into account such elements as the project's ability to raise additional funding and dependence on other technological developments.

### **Research Partner Collaboration (Research Partner Track Only)**

Preference will be given to projects that facilitate collaboration among NIREC's Research Partners.

### **Nevada Scope Content/Potential Future Economic Impact (U.S.-based Early-Stage Company Track only)**

Although there is no minimum requirement of the percentage of work that must be performed in Nevada, you should strive to dedicate at least 20% of the technology development budget for scope of work performed in Nevada.

Preference will be given to projects that contain a meaningful scope performed in Nevada and/or demonstrate future favorable economic impact on the state of Nevada.

## **Appendix 1: Conducting Business in Nevada**

Nevada has a diverse and growing economy, renowned four-season outdoor recreation, vibrant communities and an affordable lifestyle. Businesses are attracted to Nevada for its competitive tax climate, lower tax burden, easier permitting and licensing services, business assistance programs and affordability. In fact, in [Chief Executive's annual survey](#) of best and worst states for business conducted in late January of this year, 651 CEOs across the U.S. ranked Nevada number #5 on the list of "Best States for Business."

Nevada is endowed with extensive renewable energy resources. The state was ranked #1 in geothermal resources and #4 in solar power resources by Forbes.com in 2008. Southern Nevada is home to the world's largest solar thermal power plant, and Reno is the only city in the United States with a population greater than 100,000 whose electricity needs can be met solely by the geothermal market. Legislation is already in place that benefits businesses focused on the development, transmission and use of clean energy. For example, Nevada has among the most aggressive Renewable Portfolio Standards in the world (20% by 2020, 25% by 2025.).

Located in the western United States and bordering the growing California renewable energy market and proximate capital sources, Nevada is an ideal location for both starting and growing a successful clean energy business.

Renewable energy incentives include up to 50% abatement for up to 10 years on real and personal property, partial abatement of sales/use tax on capital equipment purchases, a per watt incentive for private and small businesses, schools and public buildings for installing solar systems, and up to 35% abatement for up to 10 years on real property for LEED buildings.

Nevada offers a simple, fast and less costly process of incorporation, with no minimum initial capital required, nominal annual filing fees, and limited reporting and disclosure requirements.

In Nevada, there is

- no corporate income tax
- no personal income tax
- no franchise tax on income
- no inheritance or gift tax
- no unitary tax
- competitive sales and property tax rates
- minimal employer payroll tax (0.63% of gross wages with deductions for employer paid health insurance)

*U.S. News & World Report's* list of "The 7 Best States to Start a Business" ranks Nevada at#5:

"Nevada has no income or capital-gains tax for individuals or corporations, the 15th-lowest property taxes, and the second-lowest number of government employees. But that low level of government has not come at the cost of the state's economic infrastructure. Nevada ranks high for several factors important for future innovation, including the export focus of its manufacturing sector, the productivity of its manufacturing sector, number of patents issued, and the electronic sophistication of its healthcare system."

Additional information and resources are available through the Nevada Commission on Economic Development at [Expand2Nevada.com](#). This website includes links to many resources, including incentive programs, business assistance, information about the state and a handy cost of living calculator.

Applicants are strongly encouraged to confer with NIREC staff at [rfp@nirec.org](mailto:rfp@nirec.org) regarding partnership needs and opportunities in Nevada.

## Appendix 2: Technology Readiness Levels

### TRL-1. Basic principles observed and reported

This is lowest level of technology readiness. Scientific research begins with a systematic study directed toward greater knowledge or understanding of the fundamental aspects of phenomena and of observable facts without specific applications or products in mind. The knowledge or understanding will later be translated into applied research and development. Example might include studies of a technology's basic properties.

### TRL-2. Technology concept and/or application formulated

Invention begins. Once basic principles are observed, practical applications can be invented. Applications are speculative and there may be no proof or detailed analysis to support the assumptions.

### TRL-3. Analytical and experimental critical function and/or characteristic proof of concept

Active research and development is initiated. This includes analytical studies and laboratory studies to physically validate analytical predictions of separate elements of the technology. Examples include components that are not yet integrated or representative.

### TRL-4. Component and/or breadboard validation in laboratory environment

Basic technological components are integrated to establish that they will work together. This is relatively "low fidelity" compared to the eventual system. Examples include integration of "ad hoc" hardware in the laboratory.

### TRL-5. Component and/or breadboard validation in relevant environment

Fidelity of breadboard technology increases significantly. The basic technological components are integrated with reasonably realistic supporting elements

so it can be tested in a simulated environment. Examples include "high fidelity" laboratory integration of components.

### TRL-6. System/subsystem model or prototype demonstration in a relevant environment

Representative model or prototype system, which is well beyond that of TRL-5, is tested in a relevant environment. This represents a major step up in a technology's demonstrated readiness. Examples include testing a prototype in a high-fidelity laboratory environment or in simulated operational environment.

### TRL-7. System prototype demonstration in a operational environment

This represents a major step up from TRL-6. It requires the demonstration of an actual system prototype in an operational environment, such as in a light duty vehicle on the road. Examples include testing a prototype battery in an operational hybrid gas-electric vehicle.

### TRL-8. Actual system completed and qualified through test and demonstration

Technology has been proven to work in its final form and under expected conditions. In almost all cases, this TRL-8 represents the end of true system development. Examples include developmental test and evaluation of the system in its intended parent system to determine if it meets design specifications.

### TRL-9. Actual system proven through successful mission operations

The technology is applied and operated in its final form and under real life conditions, such as those encountered in operational test and evaluation. In almost all cases, this is the end of the last "bug fixing" aspects of true system development. Examples include using the system under various real life conditions.

## DEFINITIONS:

**BREADBOARD:** Integrated components that provide a representation of a system/subsystem and that can be used to determine concept feasibility and to develop technical data. These tools are typically configured for laboratory use to demonstrate technical principles of immediate interest. These may resemble final system/subsystem in function only.

**"HIGH FIDELITY":** Addresses form, fit and function. High-fidelity laboratory environment would involve testing with equipment that can simulate and validate all system specifications within a laboratory setting.

**"LOW FIDELITY":** A representative of the component or system that has limited ability to provide anything but first order information

about the end product. Low fidelity assessments are used to provide trend analysis.

**MODEL:** A functional form of a system generally reduced in scale, near or at operational specification. Models will be sufficiently developed to allow demonstration of the technical and operational capabilities required of the final system.

**OPERATIONAL ENVIRONMENT:** Environment that addresses all of the operational requirements and specifications required of the final system to include platform/packaging.

**PROTOTYPE:** The first early representation of the system that offers the expected functionality and performance expected of the final

implementation. Prototypes will be sufficiently developed to allow demonstration of the technical and operational capabilities required of the final system.

**RELEVANT ENVIRONMENT:** Testing environment that simulates the key aspects of the operational environment.

**SIMULATED OPERATIONAL ENVIRONMENTAL:** Either 1) a real environment that can simulate all of the operational requirements and specifications required of the final system, or 2) a simulated environment that allows for testing of a virtual prototype; used in either case to determine whether a developmental system meets the operational requirements and specifications of the final system.