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Walking Box Ranch Planning and Design Quarterly Progress Report: Period ending January 10, 2010

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QUARTERLY PROGRESS REPORT

**University of Nevada, Las Vegas
Period Covering October 11, 2009 – January 10, 2010
Financial Assistance Agreement #FAA080094**

Planning and Design of the Walking Box Ranch Property

Executive Summary

- To advance educational and research goals at the ranch UNLV will fund the purchase and installation of a weather station at the ranch, and preliminary research using this equipment. PI Dr. Suresh Sardineni, Mechanical Engineering, will assess the renewable energy resources at the ranch and find methods to integrate them into existing and proposed new buildings at the site. The planned facilities will monitor beam and global solar radiation, wind speed and direction, temperature, and relative humidity. UNLV will provide funding to support two graduate students and partial salary for Dr. Sardineni.
- Bill Wood, UNLV Real Estate Management, is working with Rex Bell to create an inventory of items that Rex would like to donate or sell to UNLV for inclusion in the planned museum at Walking Box Ranch. This is the first stage in identifying items that will eventually be available for exhibit in the ranch house, the anticipated blacksmith shop display that will be located near the barn, and in the barn exhibit area.
- UNLV has completed a scope of work to conduct a “Visitor Services Feasibility, Compatibility, Market Study, and Business Plan,” and submitted a Competitive Exemption form to UNLV purchasing to proceed in completing a contract with Dornbusch and Associates. This request is under review by UNLV purchasing.
- UNLV is working with Architectural Resources Group to determine the quantity and sizes of rhyolite rock we need to obtain from the Viceroy Castle Mountain deposit to use for building stone in the new construction. This process has been slowed owing to a break in contracting between BLM and the architectural team for the next stage of the project.
- UNLV learned that the submitted EPSCoR proposal requesting funding for sustainable energy research at WBR, was not selected to be forwarded to the national competition. Proposal reviews were very good and UNLV will search for alternative funding sources to whom a revised version of the proposal can be submitted.

- UNLV and Architectural Resources Group (ARG) have completed the Master and Preservation Plans funded by an SAT grant to UNLV. The plans are now under final review by the NPS.

Summary of Attachments

- **DornbuschWBR Proposal Business Plan 9-3-09.doc**
- **EPSCoRReview.pdf**

Planning and Design, and Construction Phase Items:

1. *Provide BLM with consultation and advise to assist the BLM in defining the scope of work for the design of this project. The UNLV shall coordinate with the University departments and schools and act as the academic focal point for information relative to the design of the Science and Training Center for arid land studies.*
 - UNLV (Cline, Rees, and Dan McLean and James Busser, UNLV Hotel College) completed a scope of work for a “Visitor Services Feasibility, Compatibility, Market Study, and Business Plan”. The team submitted a Competitive Exemption form to UNLV purchasing to sole source this contract with Dornbusch and Associates, who completed a preliminary business plan as part of the SAT grant to UNLV. UNLV purchasing requested further information from Dornbusch regarding their anticipated costs and will make a decision on our request after they receive this information. The completed scope of work is included as attachment **DornbuschWBR Proposal Business Plan 9-3-09.doc**.
 - UNLV learned that a proposal submitted to Nevada DOE EPSCoR entitled “Renewable energy center in a rural desert environment”, for \$2,674,418 to conduct renewable energy research at the ranch, will not be forwarded to the international EPSCoR competition. The proposal reviews, attached (**EPSCoRReview.pdf**), were very strong including comments such as: “A project like this is absolutely necessary and could hopefully inspire more similar projects. A model for a universal renewable energy center that can be replicated in many states would a great tool for promoting renewable energy technologies.” UNLV will pursue submitting a revised version of the proposal to other funding sources.
 - UNLV is continuing to work with Condit Exhibits as they proceed in preparing a logo specification document, and outlining marketing ideas and available colors. UNLV anticipates finalizing these efforts with conference call in the next quarter.
2. *Participate in all phases of scoping and planning meetings and meetings with the BLM’s planners, architects, and contractors for the design and development of the Walking Box Ranch as a Science, Research, and Training Center and*

Museum for the study of arid lands and development of the Headquarters as a Museum and interpretive center. The UNLV's participation is to provide input to the BLM relevant to the specific educational and research goals of the project.

- There were no meetings with BLM or BLM architects or contractors during this quarter likely owing to a break in contract between BLM and the architecture team.
- Rees and Cline met with Marijo Rugwell, Tim Wakefield, Bob Taylor, Nancy Christ and other visitors from BLM at the ranch on Thursday October 15 to provide BLM with an overview of the 100% Concept Design plan, and to walk BLM around the property to view the existing historic buildings and the selected locations for future buildings.
- UNLV is continuing to work with Bob Morton on EDAW's team to determine the best method to analyze well water at the ranch for coliforms, nitrates and other constituents. Testing is necessary so that Bob Morton and EDAW can begin designing the water treatment system. UNLV has provided Bob Morton with analytical capabilities for 3 labs in the vicinity of Las Vegas and we are waiting to hear from Mr. Morton where he would like to have these analyses done. When we receive this information we will collect water samples according to Mr. Morton's and the labs collection protocol and have the samples analyzed. We believe that we have not heard back from Bob on this issue owing to a break in contracting between BLM and the architectural team, which we have been told should be resolved this month.
- UNLV is working with Architectural Resources Group to determine the quantity and sizes of rhyolite rock we need to obtain from the Viceroy Castle Mountain deposit to use for building stone in the new construction. This process has been slowed owing to a break in contracting between BLM and the architectural team for the next stage of the project.
- As part of UNLV's effort to advance educational and research goals at the ranch UNLV will fund the purchase and installation of a weather station at the ranch and preliminary research using this equipment. The PI on this project is Dr. Suresh Sardineni, a researcher in Mechanical Engineering. The overall project goal is to assess the renewable energy resources at the ranch and find methods to integrate them into existing and proposed new buildings at the site. The planned facilities will monitor beam and global solar radiation, wind speed and direction, temperature, and relative humidity. A data logger will be installed and information will be digitally transmitted to UNLV. UNLV will provide funding to support two graduate students and partial salary for Dr. Sardineni.

3. Assist BLM in developing the environmental assessment by providing technical input and review of the draft environmental assessment.

- UNLV reviewed the Preliminary Draft EA produced by EDAW and provided comments to EDAW and BLM.

4. *Provide technical and academic advice to BLM in the development of the museum facilities, by conducting research into the historic records of the ranch and providing recommendations about the appropriate interpretive and environmental education programs that may be presented at the ranch.*

- Bill Wood, UNLV Real Estate Management, is working with Rex Bell to create an inventory of items that Rex would like to donate or sell to UNLV for inclusion in the planned museum at Walking Box Ranch. This inventory will include such items as the original ranch house dining room set, stove, Indian rugs, pictures, and blacksmith shop tools. This is the first stage in identifying items that will eventually be available for exhibit in the ranch house, the anticipated blacksmith shop display that will be located near the barn, and in the barn exhibit area.
- UNLV is continuing to work with ARG to finalized the WBR Master and Preservation Plan, which guides the design phase now in progress for the property. These plans are now under the review of the NPS.
- UNLV has learned of videos of Rex Bell, Sr. and Clara Bow that may be available through a California University. UNLV is pursuing obtaining further information about the videos, their potential availability and their content.

5. *Contribute technical and educational-based assistance to the BLM for the BLM's consideration during construction development for the Science and Training Center and Museum as it relates to the future operations of these facilities as education centers.*

- Cline has been meeting with Alan Personius and other members of the IT team at UNLV to identify IT infrastructure and hardware needed for the future museum and research facility. The group will also identify equipment and opportunities to improve digital links between the ranch, the town of Searchlight, the UNLV campus, and the web.

6. *Provide input and feedback to the BLM during the construction of the Field Research and Training Center and the Museum.*

- The project is not under construction at this time.

Phase 1 Deliverables:

- 1. *Provide a Facility and Future Needs Alignment Report that will identify the types of future research and training programs that will be conducted at Walking Box Ranch Field Research and Training Center and Museum. The report will also include a matrix that aligns predicted future activities with facility, construction, furnishing, and equipment needs.***

- This report will be prepared during 2010 following receipt of the business plan that will contribute to identifying future activities and equipment needs.
2. ***Assist the BLM in developing a Preservation Plan for Existing Structures on the Headquarters Parcel of the Walking Box Ranch.***
 - UNLV is currently working with project architects and engineers to determine how best to preserve the historic buildings. Preservation plan development made little progress this quarter owing to a break in contract between BLM and the architecture team.
 3. ***Provide a Business Plan detailing anticipated future research, training, and other use goals and a financial plan for reaching those goals. The Business Plan should also describe income and operations and maintenance costs.***
 - BLM and UNLV have agreed that UNLV will take the lead in contracting with Dornbusch and Associates to provide a business plan that will be developed during 2010 (See the first item under 1. Planning and Design, and Construction Phase Items, above).

Phase 2 Deliverables:

1. ***Prepare a Project Development Plan that reflects UNLV's Business Plan. The Project Development Plan should refine the anticipated research, residential training activities, and Museum use; identify recommended new facilities and renovations; outline construction; and plan center management (print and PDF).***
 - The project development plan will be completed following receipt of the business plan, which is anticipated in 2010.
2. ***Assist the BLM in creating a detailed Work Plans for each aspect of project development such as, but not limited to, existing building use, new construction, interpretive programs, and center management, based upon the Comprehensive Master Plan and Preservation Plan.***
 - Work plans will be created when the Comprehensive Master Plan and Preservation Plan are completed by ARG and approved by NPS.

Phase 3 Deliverables:

1. ***Assist in the development of Facilities Design Drawings according to the recommendations of the Comprehensive Master Plan generated by the SAT project, in conformance with existing significant architectural features and historical attributes of the property, in a fashion responsive to LEED goals to the extent funding permits, and to meet all property easements.***

- Although the master and preservation plans are not yet complete, we continue to assist in the development of design drawings. Little progress was made on this deliverable this quarter owing to a gap in contracting between BLM and the architectural team.
- 2. *Assist in the development of Facilities Design Drawings for the preservation of facilities according to the recommendations of the Comprehensive Master Plan and Preservation Plan in conformance with historical and architectural attributes of the buildings and property, and to meet all property easements.***
- Although the master and preservation plans are not yet complete, we continue to assist in the development of design drawings. Little progress was made on this deliverable this quarter owing to a gap in contracting between BLM and the architectural team.

Phase 4 Deliverables (During Construction):

- 1. *Provide the BLM consultation and advice during construction to help the BLM ensure the construction meets the goals of the project.***
- The project is not under construction at this time.
- 2. *Provide the BLM consultation and advice as needed during renovation of preserved facilities, to help the BLM ensure that the renovation meets goals of projects and is in accordance with historical restoration requirements and according to approved designs.***
- The project is not under construction at this time.

Phase 5 Deliverables:

- 1. *Assess and identify furnishings and equipment based upon facility needs; provide the BLM information related to furnishings and equipment for new and preserved facilities so that the BLM can procure these items, within project funding under this Cooperative Assistance Agreement. The UNLV may provide additional furnishings and equipment outside of this Agreement at the UNLV's sole discretion.***
- While we are not acquiring furnishings at this time, we are continuing to work with Rex Bell, Jr. about his desire to see original ranch furnishings now in his possession returned to the ranch. For further details see the first item under Task 4 above.

SUMMARY OF PROJECT PLAN
Walking Box Ranch – Planning and Design

Year One Deliverables	Percent Complete as January 10, 2009	Plan for Completion
Planning and Design:		
1. Provide BLM with consultation and advice in defining the scope of the design of the Science and Training Center.	25%	Continue to consult and advise BLM in the scope of design of the training center
2. Participate in all phases of scoping and planning team meetings for the design and development of WBR as a Science, Research, and Training Center and Museum.	25%	Continue to participate in scoping and planning of the Museum and the training center.
3. Assist BLM in developing the environmental assessment process with technical input and review of drafts.	65%	Continue to work with EDAW and BLM on the Environmental Assessment process, scheduled to be complete later summer/early fall 2009, but now delayed until 2010.
4. Provide technical and academic advice to BLM in development of the museum facilities with recommendations of interpretive and environmental programs for presentation at the Ranch.	25%	Continue to provide technical and academic advice for interpretive and environmental programs.
5. Contribute technical and educational-based assistance to the BLM for the BLM's consideration during construction development for the Science and Training Center and Museum as it relates to the future operations of these facilities as education centers.	25%	Continue to contribute technical and educational-based assistance to the BLM for the Science and Training Center and Museum.
6. Provide input and feedback to BLM during the construction of Field Research and Training Center and the Museum.	0%	Project is not under construction.
Phase 1 Deliverables:		
1. Provide a Facility and Future Needs Alignment Report that will identify the types of future research and training	0%	Work with faculty at UNLV to identify future research and training programs and incorporate

programs that will be conducted at Walking Box.		in report. This will be completed in 2010 in conjunction with a business plan.
2. Assist the BLM in developing a Preservation Plan for Existing Structures on the Headquarters Parcel of the Walking Box Ranch.	10%	Work with BLM and ARG architects to develop preservation for existing structures.
3. Provide a Business Plan detailing anticipated future research, training, and other use goals and a financial plan for reaching those goals.	20%	Obtain a detailed business plan that builds on the preliminary building plan prepared by Dornbusch and Associates in 2009-10. This will be accomplished in 2010.
Phase 2 Deliverables:		
1. Prepare a Project Development Plan that reflects UNLV's Business Plan. The Project Development Plan should refine the anticipated research, residential training activities, and Museum use.	0%	This will begin after a business plan is developed.
2. Assist the BLM in creating a detailed Work Plans for each aspect of project development based upon the comprehensive master plan and preservation plan.	0%	This will begin after the Master and Preservation Plans are completed and approved by NPS and NV SHPO.
Phase 3 Deliverables:		
1. Assist in the development of Facilities Design Drawings according to recommendations of the comprehensive master plan generated by the SAT projects.	25%	We will continue to work with BLM, EDAW and EDAW subcontractors to assist with design of the facilities
2. Assist in the development of facilities design drawings for the preservation of facilities according to the recommendations of the Comprehensive Master Plan and Preservation Plan.	25%	We will continue to work with BLM, EDAW and EDAW subcontractors to assist with design of the facilities
Phase 4 Deliverables (During Construction):		
1. Provide the BLM consultation and advice during construction to help the BLM ensure the construction meets the goals of the project.	0%	The project is not yet in construction.

2. Provide the BLM consultation and advice as needed during renovation of preserved facilities, to meet goals of the project.	0%	The project is not in construction.
Phase 5 Deliverables:		
1. Assess and identify furnishings and equipment based upon facility needs; provide the BLM information related to furnishings and equipment for new and preserved facilities so that the BLM can procure these items, within project funding under this Cooperative Assistance Agreement.	5%	We have begun working with Rex Bell, Jr. in preparing an inventory of items he will donate or sell to be exhibited in the planned museum at the ranch. Most equipment and furnishing planning will occur during the construction period.

Submitted by:

Margaret N. Rees, Principal Investigator

01/11/2010

Date

ATTACHMENTS

Proposal
Walking Box Ranch, Desert Research Center
Visitor Services Feasibility, Compatibility, Market Study and Business Plan
Dornbusch Associates
September 3, 2009

The following proposal for a Business Plan for the Walking Box Ranch (Ranch or WBR) addresses the project components identified in the UNLV Request for Proposal outline (dated June 30, 2009), and refined during a teleconference of September 2, 2009.

Although the conference call clarified a number of issues, we believe early discussion with UNLV representatives would be useful to focus the effort. So, we propose to begin with the following:

Task I. Specify the Focus of the Operating Cost Analysis

We understand that of the various WBR functions, our assignment will be to focus exclusively on the revenue-producing visitor-service activities, and not the WBR's research or educational functions, and to derive a Feasibility Analysis and Business Plan that addresses only the revenues and costs associated with those functions.

The revenue-producing visitor services would (a) function within the physical site and facilities specified in the EDAW "Walking Box Ranch Final Design and Concept Plan," dated July 2009 (EDAW Plan) and (b) meet each of the five Planning Assumptions specified in the UNLV RFP (p. 3, Section 3). Indeed, Dornbusch's previous Market Demand Analysis was based on the EDAW Plan concept, which was presumably approved by UNLV and the BLM.

We also understand that UNLV is seeking a Business Plan that will enable the Ranch to be "financially self-sustaining," and by implication that the revenue-producing visitor services will themselves be financially self-sustaining. In focusing exclusively on these services, we understand that all of the WBR's life-cycle capital improvement costs and the WBR's O&M expenditures supporting the non-visitor serving functions will be provided from other sources, and will not require any contribution from the revenue-producing visitor serving functions.

Certainly, the marginal O&M costs specifically required to support revenue-producing visitor services will be estimated, such as especially food and beverage and retail labor, supplies, and cost of goods sold. However, some O&M line item costs will necessarily be shared between revenue-producing visitor services and non-visitor serving functions, such as utilities and insurance. Therefore, a key initial task will be to meet with the UNLV team to specify which WBR costs, and what share of those costs, are to be covered by revenues generated by revenue producing visitor services. .

We will estimate those O&M costs, by revenue department, and enter them into a financial model used to demonstrate the ability of Ranch's revenue producing visitor services to be financially self-sustaining. Indeed, the objective of the Business Plan will be to include and

balance a mix of functions whose revenues would be expected to exceed the operating costs to support those functions, and even to design the nature of operations in a way that will most likely yield profitability.

Task II. Market Analysis & Revenue Projections

We will review our revenue projections for the services and users previously identified, including tourists and the general public, bus tour groups, school groups, , and special event groups. We will conduct follow-up interviews with UNLV staff and staff of other research centers to further define the potential revenue-producing uses of the Ranch.

We will build upon our prior investigations to further expand and refine our judgments about potential revenue producing demand, according to functional types, by interviewing relevant key informants and researching data, reports, and analyses addressing demand for relevant activities and special events in the region and to related facilities/operations.

We will update and refine our previous analyses to estimate revenues that might be derived from special events and the general public's entry, use and purchase of food and beverages and merchandise.¹

We will re-evaluate the Ranch's key *strengths, opportunities, threats and weaknesses*, by first identifying them, then seeking to translate each into terms that will be expected to affect the Ranch's ability to serve and compete within the markets identified and to design a Business Plan to capitalize on the Ranch's strengths and opportunities while recognizing its weaknesses and threats.

Task III. Revenue-Producing Visitor Services Operating Plan & Expenses

We will review and revise, as might be necessary, the Ranch's revenue-producing visitor services operating plan and the associated estimates of operating expenses we made in our earlier market analysis. The context will be as described in the RFP. However, we might suggest modest modifications in the facilities to help enhance financial self-sustainability. For example, we might judge that visitor demand would increase in response to changes to specific revenue generating activities, which might then translate into the need for a somewhat larger public parking area than was originally envisioned. However, if directed, our Plan will be constrained by the use levels specified in the project EA.

Operating expenses will be derived from our in-house data for comparable enterprises of a similar size, and from trend data published by hospitality industry research firms (such as the International Association of Conference Centers; Smith Travel Research; and PKF/Hospitality Asset Advisors).

¹ We previously gathered such data from the University of California Sweeny Granite Mountains Desert Research Center, Boyd Deep Canyon Desert Research Center, Burns Pinion Ridge Reserve, and California State University Desert Studies Center. We also assessed data from the Rocky Mountain Biological Laboratory, but considered it to be somewhat less comparable to Walking Box Ranch for reasons explained in our report.

Operating expense estimates will also be updated with the latest projected repair and maintenance figures available from the EDAW/ARG architecture and planning team. One-time start-up costs and working capital requirements will also be estimated. And, we will project the initial and ongoing investments in furniture, fixtures and equipment that will be required to support the revenue-producing uses identified.

We will not address capital improvement or life-cycle replacement costs, with the understanding that all capital improvement costs will be covered from other sources.

Task IV. Financial Feasibility

We will perform a financial feasibility analysis to determine whether the Ranch's revenue generating activities will be sufficient to cover the Ranch's expenses, according to the definition of sustainability accepted by UNLV. To do that, we will enter the estimated annual operating revenues, expenses and capital costs for the accepted revenue-producing visitor services Operations into an (Excel-based) interactive financial model that we have developed and refined for similar projects, addressing similar facilities and operations.²

The model will allow us, and UNLV representatives, to assess *in real time* the expected marginal impacts of key investment and operating assumptions on revenues, operating costs, cash flow, and return targets. We will use the model to demonstrate whether the functions as structured will be self-sufficient and how to adjust the operations to achieve self-sufficiency, such as not-necessarily developing full-time or even-part time staff to cater special events, but instead contract out such services by event.

We will test the sensitivity of the model's outputs to observed expected and potential changes affecting the market for, and competition with, the Ranch, considering its unique facilities, location, and services that would be expected to either enhance or reduce visitation and event use, visitor and event spending, and the Ranch's operating revenues and support costs.

Task V. Business Plan

We will meet with the UNLV team to obtain guidance and approval of the operating concepts applied in the financial feasibility analysis. Based on that guidance, and the findings and conclusions derived from the previous tasks, we will create a cohesive Business Plan to address implementation, including management, of the WBR project. The Plan will present a timeline that schedules and prioritizes activities. For example, it will likely make financial sense to phase the way various operations are designed, such as whether to use full-time staff, part-time staff or contract caterers for special events until full- and/or part-time staff might be justified.

² Dornbusch most recently applied the model to evaluate the feasibility of redeveloping long-vacant historic buildings at Ellis Island into a conference center, and is currently using it to structure a new (and very complex) NPS concession contract at Yosemite National Park.

A marketing strategy will be developed that supports the overall WBR goals and capitalizes on the Ranch's strengths and opportunities.

The Business Plan will include the following components:

- **Introduction.** Explains the background, purpose and objectives of the Business Plan and provides a brief summary of the implementation process.
- **Vision Statement.** Describes the concept for the Ranch's adaptive redevelopment and services, and the revenue-producing activities within the overall concept.
- **Analytic Findings.** Summarizes the main findings from the planning process, which will include, as appropriate, portions of the Design Concept Plan, Master & Preservation Plan, Market Study, Operations and Financial Feasibility Assessment.
- **Proposed Programs and Facilities.** Describes the proposed programs and facilities, and explains how the developments and activities will conform to the vision and meet the goals of WBR.
- **Capital Cost Statement.** Will provide a description, with UNLV's guidance, of how capital costs to redevelop the facility will be covered. Will not address and establish the funding programs or specify capital sources.
- **Operating Plan.** Presents a plan to implement the revenue-producing visitor-serving operations, including identification of priorities, schedule of activities and assignments of responsibilities for the initial implementation and ongoing management of the Ranch's revenue-producing visitor services. We will detail staffing plans by function (such as retail sales, and food and beverages for conferences, special events, and visitation for other purposes). [If desired, as an optional task, Dornbusch will assist in developing requirements and plans for human resources (including job descriptions), volunteer programs, training, security, hours of operation, special event policies, catering and food & beverage specifications, etc.]
- **Financial Plan.** Aligned with the Operating Plan, presents estimates of the initial and continuing operating costs and revenues. Will include an implementation budget and annual pro-forma cash flows.
- **Marketing Plan.** Outlines strategies to attract both public and event users to WBR. The marketing plan will include: competitor analysis; SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis; identification of key themes (relating to the mission statement) and branding possibilities; prices, discounts, and tour and retreat packages; marketing channels and media; and projected results of promotional programs.

Note that each all of the Business Plan components are inter-related. Therefore, development of the Business Pan will be the product of an iterative process that coordinates each section with all others.

As outlined earlier, the Business Plan will focus exclusively on the revenue-producing visitor-service activities, and not the WBR's research or educational functions. The Plan will seek to enable the Ranch's revenue-producing visitor services to be financially self-sustaining.



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November 16, 2009

Robert Boehm
University of Nevada, Las Vegas
4505 S. Maryland Pkwy.
Las Vegas, NV 89154

Dear Dr. Boehm,

On behalf of the Nevada System of Higher Education, I thank you for submitting your proposal for the Department of Energy EPSCoR preproposal, "Renewable Energy Center in a Rural Desert Environment" for consideration.

After a thorough external review of all the preproposals that were submitted, your proposal was not recommended to go forward for submission to DOE. Please find a synopsis of the reviewers' comments in the hope that it helps you find funding for your proposal.

Please feel free to contact me at 702.862.5524, or Dr. David Shafer at david.shafer@dri.edu, 702.862.5564, if you have any questions.

Warm Regards,

Sincerely,

Lori M. Brazfield
Assistant Director for Operations
Nevada System of Higher Education

David Shafer
Project Director
Nevada DOE EPSCoR

Nevada System of Higher Education
Experimental Program to Stimulate Competitive Research

University of Nevada, Las Vegas • University of Nevada, Reno • Desert Research Institute • College of Southern Nevada
Great Basin College • Nevada State College • Truckee Meadows Community College • Western Nevada College

Reviewers Comments:

- Merit and benefits: The goal to develop a center for development of grid-independent rural buildings in a desert environment has a great deal of merit, and using an existing facility that is scheduled for major new construction is a good way to leverage this effort.
- Proposed method or approach: Bringing a mix of university and industry experts into a single location to work on all aspects of achieving grid independence increases the likelihood of success. Having these entities and other support staff available should encourage additional involvement by other public and private entities interested in alternate energy sources and conservation.
- Competency of personnel and adequacy of resources: Assembled staff appear competent in their fields and synergistic.
- Resources devoted to this effort appear adequate.
- Budget: Proposed budget appears reasonable.
- The proposals aims at developing a renewable energy center with research and education emphasis. This is a very timely and appropriate proposal, which could lead to significant developments of new renewable energy technologies in Nevada. Within the research center a number of new technologies is proposed to demonstrate the capabilities developed in the private industry.
- This is a very good approach that demonstrates collaboration with industry. The PI for the project is very competent as is the first Co-PI. The budget for the project is reasonable, if not modest.
- A project like this is absolutely necessary and could hopefully inspire more similar projects. A model for a universal renewable energy center that can be replicated in many states would a great tool for promoting renewable energy technologies. The authors managed to convey several important points, but fail to fully utilize this great concept.
- Good research focus on centres cooling system, innovative RE research focus, good mix of lab facilities for business incubation, and leading edge research.
- Centre design is part of a larger facility to draw in research/business partnerships, Research brings in both students and faculty
- Bios show a strong mix of backgrounds of individuals focused on key research areas.
- Strong ties to DOE research in RE areas, Very strong mix of collaborations with public and private entities, research labs and industry tech transfer handled well with separate incubation and test type facility
- Merit and benefits: The proposed center does not appear to do a good job of mimicking buildings present in rural desert communities. I would think an occupied home would be the best platform for prototyping a grid independent rural building.
- This proposal appears to be designing a grid independent office/research center building, which is most likely not a common structure in rural desert communities, and not the stated goal listed under "Potential Impact". Re-directing the project towards prototyping a grid independent rural home would make the proposal more relevant to the stated purpose.
- Proposed method or approach: The "Solar Absorption Chiller" section uses several abbreviations (ARI, ECM, COP) that are not defined. The authors know what these refer to, but the reviewers may not. The discussion of lithium bromide chillers needs to be expanded to truly explain why the comparison is being made.
- "Flexible solar cells by UNR Renewable Energy Center" section is poorly written. Ideas described are good, but poor sentence structure, poor grammar and misspelled or inappropriate words detract from the discussion. The solar cells are repeatedly described as being flexible, but there is no discussion on how this flexibility will be used to advantage in this application.
- Authors need to either explain the advantage of using this site for developing this flexible PV technology, or drop the references to it being flexible and concentrate on the cost and efficiency advantages.
- Batteries for Energy Storage section emphasizes the company's experience with batteries for electric cars, but this is a different application, with potentially different areas of critical emphasis. Power density is important for cars, but should be less important than battery cost and useful lifetime for residential use. If it is indeed important, the authors should expand on why high energy density cells developed for electric cars are also critical in this building power application.
- While the energy generation and storage sections of this proposal appear well covered, the other side of energy independence, energy conservation, appears lacking. Maybe this will be provided by the ongoing facility design work being funded from other sources, but additional emphasis, and maybe additional research partners with

expertise in insulation and energy conservation, would provide a complete team covering all aspects of achieving grid independence at a reasonable cost.

- The DOE budget for graduate and undergraduate students seems limiting for the educational benefits. Maybe the costs for additional educational involvement will be borne elsewhere, in which case this should be mentioned in the proposal. On DOE EPSCoR budget forms, Salary lines do not show yearly increases reflecting annual raises. Total Permanent Equipment lines on each yearly and total form has the cost listed in the "Funds requested from DOE" column, but not in the "Total project Cost" column. As a result, these two columns disagree by this amount in Line "J. Total Direct and indirect Costs" for years 1 through 3. The numbers do agree on Line J of the 3 year summary report, but the right column does not appear to be correctly summed.
- The proposal is starting from a very reasonable and timely concept, but fails to adequately articulate the real purpose of the center. Most importantly, it fails to define the educational impact as it is not clear at all how curriculums will be enriched by the center. Most importantly, it fails to define the educational impact as it is not clear at all how curriculums will be enriched by the center. It seems that the main stated purpose of the center is to serve as the proving grounds for the industry, which is a valid argument, but it fails to show ties with the educational component. Furthermore, the proposed research activities for the center seem to be already funded from other sources and it is not clear what new research projects will be undertaken at the center, which undermines the scientific and technical merit of the proposal. The project personnel is led by very competent and experienced PI, but with seemingly limited involvements it is not clear who would run day-to-day operations and truly carry the work. The caliber of faculty also fails to fully demonstrate the collaboration from various other disciplines. Overall, the proposal takes an idea of great merit, conveys fairly reasonable approach, but fails to fully utilize the potential and articulate the great promise of a research center
- Main thing is where is the grid independence highlighted not much mentioned.
- Bios fine except one in geothermal that does not seem to fit. A lab focus area for test??
- Doesn't show how project is funded after year 3 and highlight the milestones better

Scientific and/or technical merit or the educational benefits of the project (45 total)	35
Appropriateness of the proposed method or approach (35 total)	25
Competency of applicant's personnel and adequacy of proposed resources (10 total)	8.5
Reasonableness and appropriateness of the proposed budget (5 total)	4.5
Other appropriate factors, did they meet the research planned criteria/checklist (5 total)	4.5
Total	77.5