

**V(A). Planned Program (Summary)**

**Program # 5**

**1. Name of the Planned Program**

Economic Development with Emphasis in Rural Areas

Reporting on this Program

**V(B). Program Knowledge Area(s)**

**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
112	Watershed Protection and Management			41%	
601	Economics of Agricultural Production and Farm Management			3%	
605	Natural Resource and Environmental Economics			41%	
608	Community Resource Planning and Development			15%	
	<b>Total</b>			100%	

**V(C). Planned Program (Inputs)**

**1. Actual amount of FTE/SYs expended this Program**

Year: 2014	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	0.0	0.0	2.0	0.0
<b>Actual Paid</b>	0.0	0.0	1.7	0.0
<b>Actual Volunteer</b>	0.0	0.0	0.0	0.0

**2. Actual dollars expended in this Program (includes Carryover Funds from previous years)**

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	110858	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	129184	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

## **V(D). Planned Program (Activity)**

### **1. Brief description of the Activity**

#### Improving the Economic Capacity of Livestock Producers in Addressing Issues Of Biosecurity Actions Against Trichomoniasis.

With successful completion of ranchers' questionnaire, an analysis of factors that investigates adoption of trichomoniasis vaccine by Nevada public land ranchers has been completed. The questionnaire has also provided a means to create a representative rancher analysis that exposes the financial impacts of adopting and not adopting trichomoniasis vaccine. Additionally, different trichomoniasis management scenarios were analyzed in the ranch simulation model to derive financially acceptable practices. Educational materials about the risk of contracting trichomoniasis are now being developed for three groups of ranchers: users of the vaccine, potential users, and non-users.

#### Determining Whether Rangeland Fragmentation Is Causing Ecological, Economic, and Social Impacts

An augmented ranch level simulation model for an Elko County ranch was developed by NAES economists that estimates the probability of financial survivability of a ranch from alternative public land closures due to protection of Sage Grouse populations.

#### Developing Geothermal and Solar Energy Cost-Budget Models Unique To Nevada

NAES economists have collect goals and assets of rural communities of Nevada and neighboring Utah. The team has begun empirically examined the education, training and skills of rural workers and making comparisons to the education, training and skills needed for employment in those sectors of the economy that provide high quality employment and are expanding most rapidly. Working with Western Rural Development Center (WRDC), the team is planning a regional meeting on clean energy. They are continuing to work with WRDC to develop outreach materials covering clean energy financial and economic impact analysis.

#### Tradeoffs with Private Landowners Actions in Protecting Environmental Amenities

To investigate these issues, NAES economists measure the value of wildfire risk reduction to individual wildland-urban interface residents using an experimental design based on a stated preference framework. The team surveyed 678 residents living in 35 rural communities in Nevada that are representative of the different vegetation types, community designs, and population densities found within the Western U.S.. The team then analyze how variation in actual characteristics faced by homeowners as well as responses to survey questions influence "willingness to pay" for private and public investments in mitigation.

### **2. Brief description of the target audience**

General public, local ranchers & producers, educators, community leaders, State & Federal decision/policy makers and development agencies.

### **3. How was eXtension used?**

NAES economist Tom Harris is jointly appointed with Nevada Cooperative Extension.

## **V(E). Planned Program (Outputs)**

### **1. Standard output measures**

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	250	0	15	0

**2. Number of Patent Applications Submitted (Standard Research Output)**

**Patent Applications Submitted**

Year: 2014  
 Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2014	Extension	Research	Total
<b>Actual</b>	0	3	3

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

- Peer reviewed scientific journal articles, publications on economic development , presentations at scientific meetings, presentations at stakeholder, Native American, health care organizations, agency and local government meetings.  
 Not reporting on this Output for this Annual Report

**Output #2**

**Output Measure**

- Newsletters Produced  
 Not reporting on this Output for this Annual Report

**Output #3**

**Output Measure**

- Web Sites Created or Updated

<b>Year</b>	<b>Actual</b>
2014	1

**Output #4**

**Output Measure**

- Number of Graduate Students or Post-Doctorates Trained

<b>Year</b>	<b>Actual</b>
2014	2

**Output #5**

**Output Measure**

- Leveraged Research Projects

<b>Year</b>	<b>Actual</b>
2014	443548

**Output #6**

**Output Measure**

- Manuals and other printed instructional materials produced

<b>Year</b>	<b>Actual</b>
2014	8

**Output #7**

**Output Measure**

- Number of Undergraduate Students Involved in Research

<b>Year</b>	<b>Actual</b>
2014	0

**Output #8**

**Output Measure**

- Presentations

<b>Year</b>	<b>Actual</b>
2014	17

**Output #9**

**Output Measure**

- Peer reviewed journal articles, chapters, or books

<b>Year</b>	<b>Actual</b>
2014	11

**Output #10**

**Output Measure**

- Databases, Models, Protocols, and Research Materials

<b>Year</b>	<b>Actual</b>
2014	4

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	New fundamental or Applied knowledge
2	Improved skills of students, post-doctorate, and stakeholders
3	New improved methods
4	Actively apply practical policy and decision-making knowledge
5	Apply improved fundamental or applied knowledge
6	Increase economic competitiveness in rural communities
7	State And Regional Economic Impacts Of Clean Energy Construction And Operation

**Outcome #1**

**1. Outcome Measures**

New fundamental or Applied knowledge

Not Reporting on this Outcome Measure

**Outcome #2**

**1. Outcome Measures**

Improved skills of students, post-doctorate, and stakeholders

Not Reporting on this Outcome Measure

**Outcome #3**

**1. Outcome Measures**

New improved methods

Not Reporting on this Outcome Measure

**Outcome #4**

**1. Outcome Measures**

Actively apply practical policy and decision-making knowledge

**2. Associated Institution Types**

- 1862 Research

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2014	0

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

With over 87 percent of total land acreage in the state of Nevada under control of the federal government, the impacts of changes in public land management policies and federal land payments will impact the economies of the state of Nevada. Often, changes in public land management policies are not researched or analyzed, especially consequences to the local economy and fiscal balances of government.

**What has been done**

An augmented ranch level simulation model for Elko County, Nevada was developed that estimated the probability of financial survivability of the ranch from alternative public land closures due to protection of Sage Grouse populations.

**Results**

Removing cattle from the range has been shown to reduce net income of cattle ranchers. If a herd is reduced below 30% to protect sage grouse habitat, net revenues start to run in the red. Rural county governments are also concerned because property taxes capitalize on number of cattle produced, regardless of public or private land use. Results of this study are providing Nevada's Elko, Esmeralda, Lander, Lincoln, Nye and White Pine counties governmental decision makers information as to potential impacts of alternative public land policies for development of consensus policies.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
601	Economics of Agricultural Production and Farm Management
605	Natural Resource and Environmental Economics
608	Community Resource Planning and Development

**Outcome #5**

**1. Outcome Measures**

Apply improved fundamental or applied knowledge

Not Reporting on this Outcome Measure

**Outcome #6**

**1. Outcome Measures**

Increase economic competitiveness in rural communities

Not Reporting on this Outcome Measure

## **Outcome #7**

### **1. Outcome Measures**

State And Regional Economic Impacts Of Clean Energy Construction And Operation

### **2. Associated Institution Types**

- 1862 Research

### **3a. Outcome Type:**

Change in Knowledge Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2014	0

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

With increasing fuel prices and the desire for energy independence, clean or green energy as an energy source has become a target for national and regional economic development. However deriving the costs of these new clean energy sources and technologies and accompanying economic impacts have been somewhat ignored. There are national models such as JEDI which researchers can use. However, the JEDI model is limited and has not been used for all sources of clean energy. For Nevada the JEDI model is quite limited and does not cover biomass, geothermal, micro-hydropower, wind, and solar sources.

#### **What has been done**

The JEDI model, as well as products developed by Orr, Johnson, and Badger (2004), Johnson (2004), and Agricultural and Food Policy (2011) were reviewed in order to determine their applicability in developing clean energy budgets. Cost budgets for constructing clean energy projects were formulated and budgets developed. Using input-output models, total economic, employment, and household income impacts were determined from clean energy operations. Also, construction costs of these clean energy projects were developed to estimate construction impacts. Finally, two models were developed for clean energy impact analysis, the stochastic financial simulation model and an inter-industry/occupational-industry model. Feasibility analysis was completed for five hypothetical alternative energy projects.

#### **Results**

With the completion of the stochastic financial simulation model, the NAES sponsored Center for Economic Development has made the model available for outside economists. Working with Western Regional Development Center, the team has set up a regional meeting on clean energy. The Nevada Solar Nexus Project Meeting was held that discussed the stochastic financial simulation model for clean energy that was developed for this project.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
605	Natural Resource and Environmental Economics
608	Community Resource Planning and Development

#### V(H). Planned Program (External Factors)

##### External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Programmatic Challenges

##### Brief Explanation

As mentioned earlier, the Experiment Station is still recovering from the 31 hard money positions lost after the 2010 circulation review. Until a number of critical areas are re-staffed the economic resource program will be severely hampered.

#### V(I). Planned Program (Evaluation Studies)

##### Evaluation Results

The development of a stochastic ranch financial simulation model that analyzes the impacts on financial survivability to an Elko County ranches from alternative Sage Grouse Population strategies. This model has proven to be robust enough for utilization in any situation where public lands are having a potential impact on the ranching economy.

A series of rancher surveys were collected and entered in newly created database that is used to derive statistical significant factors in adopting the trichomonais vaccine for cattle.

##### Key Items of Evaluation

- Developed a new stochastic financial simulation modeling tool that is deployed to users via Microsoft Excel.
- Developed a new inter-industry and industry-occupational model for clean energy impact analysis.
- Developed a ranch level simulation model specifically for Elko County, Nevada that looks at financial survival due to land closers associated with protection of Sage Grouse.
- Three versions of the "Willingness to Pay" survey instrument in protecting environmental amenities were created.
- A journal article was published on the Homeowners' willingness to pay for private and public actions to reduce wildfire risk.
- An article on Optimal Livestock Management on Sagebrush Rangeland with Ecological

Thresholds, Wildfire, and Invasive Plants was published in the Journal of Land Economics.