

2014 University of Nevada Research Plan of Work

Status: Accepted

Date Accepted: 08/14/2013

I. Plan Overview

1. Brief Summary about Plan Of Work

The College of Agriculture, Biotechnology, and Natural Resources (CABNR) is a founding college of Nevada's Land-Grant University. The college has a long and distinguished record of fulfilling the tripartite mission of teaching, research, and outreach education benefiting the health and economic vitality of Nevada's citizens. In an effort to be relevant and accountable, the college has continuously and systematically reviewed and focused its programs to address Nevada's highest priority needs. CABNR fully subscribes to and supports the University's goal to achieve recognition as a "Fully Engaged" institution and is committed to the principles of accessibility and program utility that have guided the Land Grant University System for 150 years.

Mission of CABNR and the Nevada Agriculture Experiment Station (NAES) is to improve the quality of life for all Nevadans through education and research that:

1. supports the agriculture enterprise,
2. promotes community health and wellbeing,
3. sustains natural resources and the environment, and
4. stimulates economic development.

To fulfill the Land Grant mission, CABNR/NAES works closely with a broad spectrum of stakeholders including representatives of Nevada's major industries, federal and state agencies charged with managing natural resources, and non-governmental organizations. Communication, cooperation and committed partnerships are realized through formal working group meetings, periodic listening sessions, meetings of the CABNR Advisory Board and many informal contacts.

CABNR/NAES is fortunate to have an advisory board composed of committed citizen stakeholders with strong and historic connections to the University and especially the College. The Board provides perspective, keeps the College leadership grounded in reality, reviews and offers advice on proposals and programs, and supports positions that strengthen and expand the effectiveness of the College's ability to address identified critical issues and problems. Stakeholders across the State create a network of feedback and advice regarding both College and University policies and programs.

Maintaining and utilizing this valuable connection to the citizen owners of their Land Grant University demonstrates the CABNR/NAES commitment to the Land Grant ideals and principles.

As an initial step to achieving our mission, CABNR has engaged in a series of facilitated statewide discussions with citizens interested in and committed to the future of the College and all of its teaching and research programs. In responding to the critical needs identified during these discussions, CABNR and the NAES will work to make the mission a reality by focusing future teaching, research, discovery, and extended educational efforts into four priority areas.

1. CABNR/NAES will be a recognized leader in the utilization of biotechnology and managed land resources for the development and growth of Nevada's agriculture enterprise and the general economy.
2. CABNR/NAES will be a recognized leader in research and the training of professionals who improve

the health of Nevadans.

3. CABNR/NAES will be a recognized center for both research and knowledge dissemination related to sustaining ecosystem function on semi-arid and montane landscapes in the Great Basin and similar global environments.

4. CABNR/NAES will be a model for using multi-disciplinary teams, including stakeholders, to identify critical needs, propose courses of action, and recommend the allocation of resources.

CABNR and NAES administrators and faculty are responsible for:

- a total annual Resident Instruction and NAES budget;
- a graduate student program in four college majors and five interdepartmental majors;
- an undergraduate students program in ten undergraduate majors;
- our grants and contracts program;
- 294 employees including 73 on professional contracts;
- a total of 192 research projects including 153 with funding from external sources;
- the management of six field stations; and
- statewide responsibility to identify and address the needs of a broad base of constituents and citizen stakeholders.

The Department of Agriculture, Nutrition, and Veterinary Sciences (ANVS) supports programs of study that prepare students for successful careers in agriculture, human nutrition, and veterinary medicine. To link the various disciplines and address the needs of the state, ANVS has adopted the programmatic theme of "Sustainable Food Systems." The departmental contribution and commitment to CABNR's mission and vision will result from resource allocation and emphasis on the following:

- Combining new coursework and research to support the expansion of locally grown food and high desert agriculture.
- Expanding the human nutrition and dietetics program of excellence that focuses on the relationship between diet and chronic disease.
- Continued excellence as a gateway program for entrance into schools of veterinary medicine with a focus on large animal health.
- Expanding the new range management and ecology program with high quality teaching and research into environmentally compatible livestock production systems.

The Department of Biochemistry and Molecular Biology (BMB) prepares undergraduate, graduate and post-graduate students for a broad array of successful careers that require the application of modern biochemical and molecular genetics expertise. High quality research and teaching achieves critical advances in human and animal health, insect control, and the modification of plant genomes to create entrepreneurial opportunities and diversify the economy for the benefit of a modern society. BMB's contribution and commitment to CABNR's mission and vision will result from resource allocation and emphasis on the following:

- Maintaining an undergraduate program of excellence that serves as a point of entrance for careers in human health.
- Contributing to the growth of a skilled workforce in the application of modern genomics to agriculture and other biotechnical enterprises.
- Applying advances in genomics research to new and successful agriculture enterprises including the production of bio-fuel.
- Contributing world class, scientific research on increasing plant resistance to environmental stress to improve the success of new agriculture endeavors and post-wildfire site restoration efforts.

The Natural Resources and Environmental Science Department (NRES) prepares students for

successful careers focused on ecologically based management of our natural resources. Contributions from research support policy and land use decisions to maintain an environment and natural resource base resilient to multi-scale disturbance and increasing societal demands. NRES has adopted the programmatic theme of "Sustainable Human-Natural Systems." The departmental contribution and commitment to CABNR's mission and vision will result from resource allocation and emphasis on the following:

- Ensuring that natural resources are a productive and sustainable part of the economy of the Great Basin.
- Increasing success of post-disturbance landscape and habitat restoration in Great Basin Ecosystems.
- Reducing the threat to ecosystem sustainability from invasive exotic plant and animal species and increased pressure from use.
- Understanding the origin, transport, and fate of environmental contaminants and developing strategies to mitigate harmful effects.
- Understanding the relationship between ecosystem stability and the role of biodiversity and species adaptation.
- Developing and supporting strategies to manage threatened and endangered species of wildlife.

Challenges and Threats

Calculated on a faculty FTE basis, the course credit teaching load exceeds the University norm for a full-time instructor by double. The level of program activity and diversity, now expected by the college's constituents can only be delivered by diverting research time funded by NAES to support the teaching effort. This historic deficiency must be corrected and the budgeted Resident Instruction Faculty FTEs must be increased to align with the teaching demand being experienced.

A critical and vitally important link to facilitate the transition of knowledge gained to application is the position of Extension State Specialist. Overcutting the budget of the University of Nevada Cooperative Extension has resulted in a serious loss of faculty fulfilling this role. Additionally, departmentally based extension specialists have historically functioned at a disadvantage in the performance evaluation process when compared to traditional research and classroom teaching faculty. Time spent in assisting community based extension faculty develop programs of effectiveness and excellence receives little value and places the extension specialist at a serious disadvantage when competing for performance recognition and awards such as merit salary increases, promotion, and tenure. Attempting to alter this through accepted departmental, college and university processes has netted little in the way of progress or change.

Continuing pressure on the financial support for CABNR, NAES, and UNCE has eroded the long standing partnership between campus based research and the application of new knowledge to the solution of the State's priority problems. UNCE's funding within CABNR has continually declined placing additional burden on both the RI and NAES faculty appointments to conduct CABNR's off-campus educational efforts. Rebuilding the collaborative partnership with UNCE is essential.

An additional threat to the NAES budget and mission is a result of the legislative process in funding the NAES. All budgets are reduced during times of declining state revenues. However, as state revenues increase, the university's base teaching budget would increase based on the percentage of "the formula" that is funded. Since the NAES is a separate appropriation it can only receive a funding increase through an enhancement request for an appropriation to a special initiative. This is considerably difficult to achieve and when it does occur may not result in the funding of "core" essential activities. Current budget and elimination of NAES funded faculty FTEs will remain permanent even when the state revenue situation improves unless the university supports special enhancement requests to the legislature.

Estimated Number of Professional FTEs/SYs total in the State.

Year	Extension		Research	
	1862	1890	1862	1890
2014	0.0	0.0	19.0	0.0
2015	0.0	0.0	20.0	0.0
2016	0.0	0.0	21.0	0.0
2017	0.0	0.0	22.0	0.0
2018	0.0	0.0	23.0	0.0

II. Merit Review Process

1. The Merit Review Process that will be Employed during the 5-Year POW Cycle

- Internal University Panel
- External Non-University Panel
- Expert Peer Review

2. Brief Explanation

Scientific peer review drives the initial selection of research projects that comprise the NAES research portfolio. NAES will solicit applications from CABNR/NAES scientists in a general call for proposals that identifies the priority areas. Faculty submit the proposals through an NAES web-based application process and the individual's contributing departments are responsible for obtaining scientific peer review.

In addition to departmental peer review process, two outside non-university panels, CABNR/NAES's Advisory Board and the Range Advisory Board, will review, evaluate and rank proposals based upon their constituents' inputs.

All three groups will submit their ranked research proposals to NAES and the Director, in consultation with the Fiscal Officer, approvals are based on the departmental recommendations, peer review and advisory boards' rankings and comments and stakeholder input.

III. Evaluation of Multis & Joint Activities

1. How will the planned programs address the critical issues of strategic importance, including those identified by the stakeholders?

The RFP (Request for Proposal) solicitation sent to faculty and listed on our website identifies the research priorities as identified by NAES strategic planning which includes stakeholder input. The individual projects are approved based on the project's contribution to critical issues of importance to Nevada and to the educational programs of UNR.

2. How will the planned programs address the needs of under-served and under-represented populations of the State(s)?

Underserved and under-represented populations interests are included in the Nevada Agricultural Experiment Station and College of Agriculture, Biotechnology and Natural Resources research priorities that were established by a college and university wide strategic planning process. A proactive approach is being established to actively encourage project proposals that address these groups. Examples include strengthening our ongoing efforts to provide weigh management programs, to promote agriculture in K-6 classrooms, and to ensure that our stakeholder venues include and encourage participation by under-served and under-represented groups

The University of Nevada is an equal opportunity university and aggressively pursues recruiting underserved students. In the past 10 years, the number of minority students attending UNR has doubled.

3. How will the planned programs describe the expected outcomes and impacts?

On an annual basis, selected research projects are identified to prepare impact statements for submission into the NIFA annual report and for consideration for University and College publications. In addition, every year each NAES funded research project is required to submit an annual progress report to CRIS an AD421 which features outcomes and impacts. These annual reports are reviewed by an NAES administrative team and are evaluated for outcomes and impact. On multi-year projects, continued funding requires good progress towards accomplishing the research goals and providing impact.

4. How will the planned programs result in improved program effectiveness and/or

The web based NAES priority grant submission and peer review process is designed to improve faculty efficiency in soliciting research funding from NAES. NAES strategic planning has identified priority research areas that are stakeholder driven and designed to enhance our stakeholders' effectiveness. The effectiveness and efficiency of our programs is rated according to stakeholder feedback.

IV. Stakeholder Input

1. Actions taken to seek stakeholder input that encourages their participation

- Use of media to announce public meetings and listening sessions
- Targeted invitation to traditional stakeholder groups
- Targeted invitation to non-traditional stakeholder groups
- Targeted invitation to traditional stakeholder individuals
- Targeted invitation to non-traditional stakeholder individuals
- Targeted invitation to selected individuals from general public
- Other (Conduct field days at our field stations across the state)

Brief explanation.

To fulfill the Land Grant mission, CABNR works closely with a broad spectrum of stakeholders including representatives of Nevada's major industries, federal and state agencies charged with managing natural resources, and non-governmental organizations. Communication, cooperation and committed partnerships are realized through formal working group meetings, periodic listening sessions, meetings of the CABNR Advisory Board and many informal contacts.

CABNR/NAES is fortunate to have an advisory board composed of committed citizen stakeholders with strong and historic connections to the University and especially the College. The

Board provides perspective, keeps the College leadership grounded in reality, reviews and offers advice on proposals and programs, and supports positions that strengthen and expand the effectiveness of the College's ability to address identified critical issues and problems. Stakeholders across the State create a network of feedback and advice regarding both College and University policies and programs. Maintaining and utilizing this valuable connection to the citizen owners of their Land Grant University demonstrates the CABNR/NAES commitment to the Land Grant ideals and principles.

CABNR/NAES, will also seek the cooperation of UNCE to create teams composed of scientists and community-based educators to advance the application of knowledge in the identified priority areas of research and outreach education. These teams, jointly commissioned by CABNR/NAES and UNCE, may include faculty from other University colleges, industry representatives, and stakeholders where their inclusion presents a clear advantage to the team's programmatic goals.

2(A). A brief statement of the process that will be used by the recipient institution to identify individuals and groups stakeholders and to collect input from them

1. Method to identify individuals and groups

- Use Advisory Committees
- Open Listening Sessions
- Needs Assessments
- Other (Informal discussions with key stakeholders)

Brief explanation.

We currently have a broadly based CABNR/NAES Advisory Board committee and a second more focused Range Advisory Board that meet and provides advice 1-3 times per year, respectively. In addition, we have faculty members that schedules and coordinates town hall meetings throughout the state with the purpose of obtaining direct input to the NAES research portfolio. Informal discussions with key stakeholders provide important input into our programs.

Our partnership with Nevada Cooperative Extension provides assistance and access to stakeholders. These teams will identify priority needs, review and rank specific proposals, recommend NAES funding to support highly ranked proposals and evaluate progress and accomplishments. Adjustments in team members, team focus, and team numbers will occur as priorities change.

2(B). A brief statement of the process that will be used by the recipient institution to identify individuals and groups who are stakeholders and to collect input from them

1. Methods for collecting Stakeholder Input

- Meeting with traditional Stakeholder groups
- Meeting with traditional Stakeholder individuals
- Meeting with the general public (open meeting advertised to all)
- Meeting specifically with non-traditional groups
- Other (Conduct Field Lab Day for stakeholders and meet with Cooperative Extension to coordinate input)

Brief explanation.

Stakeholders include producers, all federal, state and county agencies and non-governmental organizations that are involved in agricultural production and environmental stewardship. Individual stakeholders are identified through personal contact with producers, town hall meetings, attendees at field lab days, and connections with extension and college outreach personnel. Input is received verbally or written.

3. A statement of how the input will be considered

- In the Budget Process
- To Identify Emerging Issues
- Redirect Research Programs
- In the Staff Hiring Process
- In the Action Plans
- To Set Priorities

Brief explanation.

The stakeholder input is relied upon to establish the research portfolio for NAES, and that includes identification of priority areas, identifying important new issues and the actual approval and funding of new and continuing projects.

V. Planned Program Table of Content

S. No.	PROGRAM NAME
1	Global Food Security and Hunger - Agricultural Production in a Semi-Arid Environment
2	Animals and their Systems
3	Natural Resource Management and Environmental Sciences in the Great Basin and Sierran
4	Nutrition and Health
5	Economic Development with Emphasis in Rural Areas
6	Sustainable Energy
7	Food Safety
8	Childhood Obesity
9	Climate Change

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Global Food Security and Hunger - Agricultural Production in a Semi-Arid Environment

2. Brief summary about Planned Program

Agriculture is one of Nevada's most important industries, contributing significantly to the economies of rural communities and the state as a whole. Supporting nearly 1,000 jobs on and off the farm, Nevada agriculture generates more than half a billion dollars annually.

Nevada's ranches may be few in number, but they rank third in the nation in size, averaging 3,500 acres. Nevada agriculture is directed primarily toward range livestock production. Dairy, sheep and lambs and hogs are among Nevada's other livestock enterprises.

Despite Nevada's arid climate, excellent crops are produced where land can be irrigated. Alfalfa hay is the leading ash crop of the state. Growing food indoors on a commercial scale is also becoming an increasingly popular farming choice in Nevada due to the state's desert climate. Not only does this industry promote job creation and additional state revenue, but it also helps make Nevada more food independent by allowing the state to increase local food production.

Agriculture in Nevada is also seeing significant new investments in high-desert farming, using hoop-style houses, solar and geothermal heat, and Nevada's natural abundance of daily sunshine to extend growing seasons and create local food sources.

It is the goal of CABNR/NAES to enhance economic stability and growth in all aspects of the Great Basin's agriculture enterprise through advances in the application of biotechnology, increased diversity of crop and animal products, increases in production efficiency, and sound strategies for soil, water, air and landscape management.

3. Program existence : Mature (More than five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships			8%	
103	Management of Saline and Sodic Soils and Salinity			28%	
131	Alternative Uses of Land			5%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants			42%	
504	Home and Commercial Food Service			9%	
701	Nutrient Composition of Food			8%	
	Total			100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Nevada's landscape is largely a semi-arid desert rangelands, with croplands adjacent to the limited number of rivers and streams. The state includes over 70 million acres of land, approximately 87% public land and 13% privately owned. Of the 13% in private farms and ranches, 87% is considered rangeland, 8% cropland, and 5% woodland and other uses. Over 90% of the land in Nevada is considered rangeland, with approximately 80% available for livestock grazing at certain times of the year.

Livestock, particularly cow-calf operations are the primary agricultural enterprises in Nevada. For the past several years, the cattle producers have experienced a fluctuation of prices. To support ranching as a viable business enterprise in Nevada, NAES has focused its attention on research designed to help producers market as high quality and healthy animals as possible. The foundation of all these efforts is a three tiered marketing strategy whereby producers separate their cattle and strategically time their marketing. In an effort to meet the increasingly pressing education need of alternative marketing strategies, the principles of the University of Nebraska's agriculture marketing and risk management course have also been adopted. Approximately 20% of most ranches annual income is realized in cull cow sales. In January, 1997, USDA implemented rule changes which made "B" maturity cattle ineligible for Choice grading. These rule changes reduce the value of culled cows by as much as \$150 per carcass. In an effort to minimize this loss, UNCE developed a marketing alternative education program.

The alternative marketing strategies identified above are successful only if the animals arrive at the feed lot or other grazing areas in a healthy condition. Thus preconditioning management, enhancing the immune system, and overall stress reduction, is a major focus of all research and educational programming for livestock producers.

The 8% private land considered cropland includes 66% as harvested crops, 26% as pasture, and 8% as idle acres or other uses. Specific crops harvested include 235,000 acres of irrigated alfalfa for hay, 270,000 acres meadow and other hay production, 17,000 acres wheat and barley, 10,000 acres alfalfa for seed production, 8,000 acres for potatoes, and 5,000 acres in garlic, onions and other crops. These figures show that 92% of the cropland produces hay for livestock.

Priorities include increasing overall quality and health of livestock production in Nevada and the west through research and education programming. To develop an understanding of plant biology through basic research and evaluate potential new plant industries for Nevada. To conduct research and education programming directed at marketing Nevada generated products.

2. Scope of the Program

- In-State Research
- Multistate Research
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Internal linkages include the Nevada Cattlemen's Association, local veterinarians, Nevada Farm Bureau and other agricultural organizations. Multi-state research and integrated extension programs will be administered through the NAES and CABNR administrative offices in collaboration with UNCE.

Multi-state research programs will be governed through the Western Association of Agricultural Experiment Station Directors (WAAESD), involving peer and program review and subsequent decisions by the Regional Coordination and Implementation Committee (RCIC), a sub-committee of WAAESD.

Coordination of multi-state extension, research and integrated research and extension activities will be governed by the Western Extension Directors (WED) and WAAESD. A peer and program review committee with broad based multi-functional representation entitled the Multi-State Review Committee will conduct the initial review and make recommendations to WED and WAAESD. One committee with new name Multi-state Review Committee (MRC)

2. Ultimate goal(s) of this Program

There are three primary outcomes expected of the research aspect of this goal. The first is to increase the overall quality and health of the livestock produced through research and education. Secondly, it is to understand and improve the quality of plants through basic research. Lastly, to become a recognized leader in the utilization of biotechnology and managed land resources for the development and growth of Nevada's agriculture enterprise and the general economy.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2014	0.0	0.0	1.5	0.0
2015	0.0	0.0	2.0	0.0
2016	0.0	0.0	2.0	0.0

Year	Extension		Research	
	1862	1890	1862	1890
2017	0.0	0.0	2.5	0.0
2018	0.0	0.0	2.5	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

CABNR/NAES will continue to conduct research to enhance agricultural production in Nevada.

Media - publish the research findings in peer reviewed journals, submit news releases on new findings, publish an on-line CABNR Quarterly Newsletter that features research and education successes from the College and NAES, include publications and report research impacts reports on the CABNR/NAES web page.

Outreach - conducting rural tours and participating in town hall meetings, holding field lab open houses to demonstrate our research findings, conduct greenhouse, high tunnel, and food processing workshops, and share results with extension faculty for inclusion in the extension outreach programs.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> ● Education Class ● Workshop ● One-on-One Intervention ● Other 1 (Town hall meeting) ● Other 2 (Field lab open houses) 	<ul style="list-style-type: none"> ● Public Service Announcement ● Newsletters ● Web sites other than eXtension

3. Description of targeted audience

The target audience for research and educational programming is agriculture and livestock producers, urban greenhouse industry, veterinarians, agency personnel and local government organizations as well as students taking classes or participating in research activities.

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
 - Number of patents submitted
 - Number of peer reviewed publications
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Peer reviewed journal articles, chapters, or books
 - Non-peer reviewed publications
 - Presentations
 - Demonstrations and workshops conducted
 - Leveraged research funds
 - Web sites created or updated
 - Number of graduate students and post-doctorates trained
 - Number of undergraduate students involved in research program
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	New fundamental or Applied knowledge
2	Improved skills of students, post-doctorate, and stakeholders
3	New or improved methods
4	Adopt and use new methods or improved technology
5	Greater productivity in food provisions
6	Increase economic competitiveness
7	Adopt new improved skills
8	Apply improved fundamental or applied knowledge

Outcome # 1

1. Outcome Target

New fundamental or Applied knowledge

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 103 - Management of Saline and Sodic Soils and Salinity
- 131 - Alternative Uses of Land
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 504 - Home and Commercial Food Service
- 701 - Nutrient Composition of Food

4. Associated Institute Type(s)

- 1862 Research

Outcome # 2

1. Outcome Target

Improved skills of students, post-doctorate, and stakeholders

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 103 - Management of Saline and Sodic Soils and Salinity
- 131 - Alternative Uses of Land
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 504 - Home and Commercial Food Service
- 701 - Nutrient Composition of Food

4. Associated Institute Type(s)

- 1862 Research

Outcome # 3

1. Outcome Target

New or improved methods

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 103 - Management of Saline and Sodic Soils and Salinity
- 131 - Alternative Uses of Land
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 504 - Home and Commercial Food Service
- 701 - Nutrient Composition of Food

4. Associated Institute Type(s)

- 1862 Research

Outcome # 4

1. Outcome Target

Adopt and use new methods or improved technology

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 131 - Alternative Uses of Land
- 504 - Home and Commercial Food Service

4. Associated Institute Type(s)

- 1862 Research

Outcome # 5

1. Outcome Target

Greater productivity in food provisions

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 103 - Management of Saline and Sodic Soils and Salinity
- 131 - Alternative Uses of Land
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 504 - Home and Commercial Food Service

4. Associated Institute Type(s)

- 1862 Research

Outcome # 6

1. Outcome Target

Increase economic competitiveness

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 103 - Management of Saline and Sodic Soils and Salinity
- 131 - Alternative Uses of Land
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 504 - Home and Commercial Food Service

4. Associated Institute Type(s)

- 1862 Research

Outcome # 7

1. Outcome Target

Adopt new improved skills

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 103 - Management of Saline and Sodic Soils and Salinity
- 131 - Alternative Uses of Land
- 504 - Home and Commercial Food Service

4. Associated Institute Type(s)

- 1862 Research

Outcome # 8

1. Outcome Target

Apply improved fundamental or applied knowledge

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 103 - Management of Saline and Sodic Soils and Salinity
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 701 - Nutrient Composition of Food

4. Associated Institute Type(s)

- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

Another year of State budget shortfalls continue to narrowed the breadth of NAES's research programs. Fewer research projects will be supported and recruiting graduate students will be difficult.

The Experiment Station is still trying to recover from the 31 hard money positions lost after the 2010 circulation review. Until a number of critical areas are re-staffed the agricultural program will be severely diminished. The circular review has also produced a number of administrative issues that contribute to the outcomes of our Ag program: the potential merger with Cooperative Extension, all faculty changing from 12 month to 9 month appointments, and the uncertainty regarding administrative changes (Dean/Director).

The funding shortfall has also affected the collaborations between NAES and the University of Nevada Cooperative Extension through the loss of most joint appointments. UNCE is also facing dramatic cuts in personnel over the next two years, which will undoubtedly affect NAES's stakeholder

input and dissemination of results.

This past year has seen yet other new obstacles affecting NAES's ability to conduct research that supports the agricultural community. NAES's Main Station Field Lab (MSFL), situated along the Truckee River, provides high quality agricultural opportunities and is an easy commute from UNR's main campus. However, MSFL has seen 168 acres sold to the city based upon eminent domain. Surplus water rights were sold by the university, but proceeds were not returned to NAES. And, the university is seeking to rezone another 110 acres (some of the richest soils) for commercial use, opening the door for the future sales of another section of MSFL.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Annual evaluations are conducted on each funded project and continuation of a multi-year project is contingent on appropriate accomplishments the previous year. Stakeholder input is obtained through involvement by stakeholders on review panels. CABNR/NAES will use the "Outcomes" as our measure of success for projects that have concluded.

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Animals and their Systems

2. Brief summary about Planned Program

As one of the stakeholder priorities they requested that CABNR/NAES enhance the economic stability and growth in Nevada's agricultural enterprises through advances in animal production and production efficiencies. They also requested that CABNR/NAES through research and knowledge dissemination ensure sustainable production of the State's natural resources.

To address these issues, CABNR/NAES research is focused on the health of Nevada's livestock and game species, both from a genetic standpoint and physical; The research is developing conservation plans that are compatible with Nevada agriculture and conservationist alike for a number of endangered/threatened/listed species found within our state; work is being done on predator/prey relationships between domestic and wild animals; in collaboration with BLM, research is studying the reliability of different methods of controlling populations of feral horses; as well as determining safe corridors for wildlife that averts traffic incidents.

3. Program existence : Intermediate (One to five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
121	Management of Range Resources			12%	
135	Aquatic and Terrestrial Wildlife			19%	
136	Conservation of Biological Diversity			12%	
301	Reproductive Performance of Animals			22%	
302	Nutrient Utilization in Animals			6%	
303	Genetic Improvement of Animals			3%	
304	Animal Genome			2%	
307	Animal Management Systems			3%	
311	Animal Diseases			9%	
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals			12%	
	Total			100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

The state of Nevada, like many western states, has large populations of antelope, deer, sheep, elk, and wild horses. All of these animals are economically important species from the perspective of ecotourism and/or hunting. We also host a number of species that in one way or another may eventually be listed as threatened or endangers species. Nevada is also home to a number of species that pose financial as well as physical threats to livestock, domestic pets and humans.

Most would agree that all of these species are an integral part of the Great Basin ecosystem, even if there are pros and cons.

Stakeholders are now concerned about declines in big game numbers, transfer of disease between wildlife and livestock, sustainability of threaten populations, and the threats posed to property and person by wildlife. NAES has found itself increasingly playing the role of scientific authority. Through the expertise of our faculty, NAES finds itself uniquely positioned to answer many of these questions.

2. Scope of the Program

- In-State Research
- Multistate Research

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

There are several assumptions or beliefs about the research program to anticipate continued success. Interaction between livestock/property/person and wildlife will continue as long as we enter each other's environments. Public concern about feral horses, disease transmission between domestic and wild sheep, public safety, and propagation of species encourages further investigations by justifying objectives and financial support to state and federal legislators. Numerous research collaborations exist among NAES veteran/research scientists and USFW, Nevada Dept. of Wildlife and numerous wildlife organizations. The scientists are experienced, highly motivated, and open to developing or applying new methods.

2. Ultimate goal(s) of this Program

Develop research and educational programs that will provide the science-based knowledge and skills required to manage for healthy ecosystems and support the economic and value-based sustainability of our local fauna.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2014	0.0	0.0	2.5	0.0
2015	0.0	0.0	2.5	0.0
2016	0.0	0.0	3.0	0.0
2017	0.0	0.0	3.0	0.0
2018	0.0	0.0	3.5	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Research activities will include investigation into the decline of mule deer in Nevada; wildlife guzzler effects on survival and recruitment, identifying the incidence of mycoplasma, mannheimia, and lungworm across the genetic landscape of Nevada's bighorn sheep; characterizing mountain lion distribution, abundance, and prey selection in Nevada; the impact of contraceptive treatment on fertility and behavior of feral horses; impact of agrochemical and environmental contaminants on avian species.

Our findings will then be published in peer reviewed journals, submitted as news releases, and published in our on-line quarterly newsletter. We will educate our stakeholders through outreach by conducting rural tours and participating in town hall meetings, holding field lab open houses to demonstrate our research findings, conduct greenhouse and processing workshops. Our success will also be included throughout CABNR/NAES web site as report impacts, recruitment materials, and shared with extension faculty for inclusion in the extension outreach programs.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> ● Education Class ● Workshop ● One-on-One Intervention ● Demonstrations ● Other 1 (Field Day Open Houses) 	<ul style="list-style-type: none"> ● Public Service Announcement ● Newsletters ● TV Media Programs ● Web sites other than eXtension ● Other 1 (Video)

3. Description of targeted audience

Target audiences include Nevada Department of Transportation, NV Dept. of Wildlife, sport hunters, livestock owners, local residents, numerous wildlife oriented NGOs, land-use planning agencies, and scientific community in general.

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
 - Number of patents submitted
 - Number of peer reviewed publications
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Demonstrations, Field Days, and Workshops Conducted
 - Newsletters Produced
 - Leveraged Research Projects
 - Web Sites Created or Updated
 - Manuals and Other Printed Instructional Materials Produced
 - Number of Graduate Students or Post-Doctorates Trained
 - Number of Undergraduate Students Involved in Research
 - Peer reviewed journal articles, chapters, or books.
 - Non-peer reviewed publications
 - Presentations
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	New fundamental or Applied knowledge
2	Improved skills of students, post-doctorate, and stakeholders
3	New or improved methods
4	Adopt and use new methods or improved technology
5	Greater productivity in food provisions
6	Use new or improved animal varieties
7	Actively apply practical policy and decision-making knowledge

Outcome # 1

1. Outcome Target

New fundamental or Applied knowledge

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 121 - Management of Range Resources
- 135 - Aquatic and Terrestrial Wildlife
- 136 - Conservation of Biological Diversity
- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 304 - Animal Genome
- 307 - Animal Management Systems
- 311 - Animal Diseases
- 314 - Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals

4. Associated Institute Type(s)

- 1862 Research

Outcome # 2

1. Outcome Target

Improved skills of students, post-doctorate, and stakeholders

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 121 - Management of Range Resources
- 135 - Aquatic and Terrestrial Wildlife
- 136 - Conservation of Biological Diversity
- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 304 - Animal Genome
- 307 - Animal Management Systems
- 311 - Animal Diseases

- 314 - Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals

4. Associated Institute Type(s)

- 1862 Research

Outcome # 3

1. Outcome Target

New or improved methods

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 121 - Management of Range Resources
- 135 - Aquatic and Terrestrial Wildlife
- 136 - Conservation of Biological Diversity
- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 304 - Animal Genome
- 307 - Animal Management Systems
- 311 - Animal Diseases
- 314 - Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals

4. Associated Institute Type(s)

- 1862 Research

Outcome # 4

1. Outcome Target

Adopt and use new methods or improved technology

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 121 - Management of Range Resources
- 136 - Conservation of Biological Diversity
- 301 - Reproductive Performance of Animals

- 307 - Animal Management Systems

4. Associated Institute Type(s)

- 1862 Research

Outcome # 5

1. Outcome Target

Greater productivity in food provisions

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 304 - Animal Genome
- 307 - Animal Management Systems
- 311 - Animal Diseases
- 314 - Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals

4. Associated Institute Type(s)

- 1862 Research

Outcome # 6

1. Outcome Target

Use new or improved animal varieties

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 301 - Reproductive Performance of Animals
- 303 - Genetic Improvement of Animals
- 304 - Animal Genome

4. Associated Institute Type(s)

- 1862 Research

Outcome # 7

1. Outcome Target

Actively apply practical policy and decision-making knowledge

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 121 - Management of Range Resources
- 135 - Aquatic and Terrestrial Wildlife
- 136 - Conservation of Biological Diversity
- 307 - Animal Management Systems

4. Associated Institute Type(s)

- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Competing Public priorities

Description

Climate: Nevada annual average precipitation continues to decline, with past two winters scoring some of the driest on record. Without adequate water supplies the competition between livestock and wildlife for resources could prove to be deadly.

Diminished resources: Maintaining required program diversity and complexity in the face of a 38% reduction in financial support has stretched faculty resources extremely thin and programs have become increasingly vulnerable to the loss of key faculty.

Decline in Federal and State Funding: The continuing decline in federal and state appropriated funds available to support teaching and research programs places additional pressure on the need to secure external funding to adequately address priority research and education programs.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Annual evaluations are conducted on each funded project and continuation of a multi-year project is contingent on appropriate accomplishments the previous year. Stakeholder input is obtained through involvement by stakeholders on review panels. CABNR/NAES will use the "Outcomes" as our measure of success for projects that have concluded.

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Natural Resource Management and Environmental Sciences in the Great Basin and Sierran Ecosystems

2. Brief summary about Planned Program

Nevada is world renowned for its Great Basin rangeland and high Sierra Nevada mountains, its unique plant and animal species. With increasing human pressure and a growing need to balance competing demands, the relentless incursions of invasive species and natural disasters, Nevada needs new and better ways to manage the impacts on the environment.

To address these critical issues, CABNR/NAES research is focused on evaluating long term vegetation changes in the Great Basin, measuring heavy metal contamination in Nevada's waterways, pheromone protection of forests, evaluating livestock grazing for noxious weed management, compatibility of wildlife and livestock grazing, evaluating post wildland fire restoration and grazing systems, evaluating forest wildfires and ecosystems recovery, studying soil transport properties using NAES field labs to conserve water and improve water quality and developing a conservation plan compatible with Nevada agriculture.

3. Program existence : Mature (More than five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships			13%	
103	Management of Saline and Sodic Soils and Salinity			2%	
111	Conservation and Efficient Use of Water			5%	
112	Watershed Protection and Management			12%	
121	Management of Range Resources			31%	
122	Management and Control of Forest and Range Fires			2%	
123	Management and Sustainability of Forest Resources			1%	
125	Agroforestry			5%	
132	Weather and Climate			1%	
133	Pollution Prevention and Mitigation			13%	
135	Aquatic and Terrestrial Wildlife			2%	
136	Conservation of Biological Diversity			2%	
211	Insects, Mites, and Other Arthropods Affecting Plants			10%	
216	Integrated Pest Management Systems			1%	
	Total			100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Nevada's landscape is largely arid to semi-arid desert rangelands, with croplands adjacent to the limited number of rivers and streams. The state includes over 70 million acres of land, approximately 87% public land and 13% privately owned. The two primary government land management agencies, BLM and USFS, are responsible for management of approximately 76% of Nevada's land. Of the 13% in private farms and ranches, 87% is considered rangeland, 8% cropland, and 5% woodland and other uses. Over 90% of the land in Nevada is considered rangeland, with approximately 80% available for livestock grazing at certain times of the year.

Nevada has a population of approximately 2.7 million. Over 94% of the people live in cities larger than 25,000 population. Approximately 5,500 people, or less than 1% live on Nevada's 2,700 farms and ranches. Nevada's population therefore is simultaneously one of the most urbanized of all states and is also considered frontier, with less than 6 persons/square mile. Further, less than 25% of the state's citizens are native born.

Decisions about the utilization of natural resources, particularly public lands and water, have major impacts on ecosystem sustainability as well as the socioeconomic wellbeing of current and future

generations. Yet views of what constitute appropriate land and natural resource use are increasingly polarized. Federal initiatives for natural resource management often shift with the latest election

2. Scope of the Program

- In-State Research
- Multistate Research
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

An extensive review of scientific work show that the Great Basin rangeland resource has changed significantly over the past 150 years. The change has resulted in a reduction in plant species diversity and a movement toward extensive monocultures of pinion juniper and larger scrub species rather than mosaics of grassland savannas and shrubs. In addition, alien plant species that can form extensive monoculture plant communities are becoming ever-larger components of the Great Basin environment. The effect of this trend is a reduction of forages for a diverse population of wildlife and domestic livestock. In turn, this change is reducing the economic sustainability of the Great Basin livestock industry and the continued sustainability of recreational activities developed around wildlife.

The Nevada Agricultural Experiment Station will continue to coordinate the activities of the Federal and State agencies to address the highest priority issues and concerns relating to the management and protection of our public lands and natural resources, and the rural families and communities most dependent on them. The Initiative will be a coordinated mix of research, education and action programs. The leadership of the agencies will establish program priorities and commit resources. Other public and private organizations with expertise or a stake in the Initiative programs have been invited to participate in planning and implementation.

2. Ultimate goal(s) of this Program

Our Vision: Healthy rangelands that meet the needs and values of multiple users and are managed to meet the needs of future generations. A vital part of our vision is thriving rural communities and families that are partners in the stewardship of our rangelands.

Goals: Develop research and education programs that will provide the science-based knowledge and skills required to manage for healthy and productive rangelands, provide abundant renewable natural resources, and support the economic and value-based sustainability of our rural communities and families and our urban stakeholders.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890

Year	Extension		Research	
	1862	1890	1862	1890
2014	0.0	0.0	2.5	0.0
2015	0.0	0.0	2.5	0.0
2016	0.0	0.0	3.0	0.0
2017	0.0	0.0	3.0	0.0
2018	0.0	0.0	3.5	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

To address these critical issues, NAES research will be conducted on evaluating long term vegetation changes in the Great Basin, measuring heavy metal contamination in Nevada's waterways, pheromone protection of forests, evaluating livestock grazing for noxious weed management, evaluating post wildland fire restoration and grazing systems, evaluating forest wildfires and ecosystems recovery, studying soil transport properties using NAES field labs to conserve water and improve water quality and evaluating sage grouse habitats and developing a conservation plan compatible with Nevada agriculture.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> ● Education Class ● Workshop ● One-on-One Intervention ● Demonstrations ● Other 1 (Town Hall Meetings) ● Other 2 (Field Lab Open Houses) 	<ul style="list-style-type: none"> ● Public Service Announcement ● Newsletters ● TV Media Programs ● Web sites other than eXtension

3. Description of targeted audience

The target audiences for research and educational programming are livestock producers, ranchers, veterinarians, environmentalists, local governments, native american groups and agency personnel.

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Peer reviewed scientific publications, publications in natural resource and environmental organization publications, presentations at scientific meetings, presentations at stakeholder, Native American and agency meetings.
- Demonstrations, Field Days, and Workshops Conducted
- Newsletters Produced
- Leveraged Research Projects
- Web Sites Created or Updated
- Manuals and Other Printed Instructional Materials Produced
- Number of Graduate Students or Post-Doctorates Trained
- Number of Undergraduate Students Involved in Research

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	New fundamental or Applied knowledge
2	Improved skills of students, post-doctorate, and stakeholders
3	New or improved methods
4	Adopt and use new methods or improved technology
5	Actively apply practical policy and decision-making knowledge
6	Increase economic competitiveness
7	Improve water quality and a sustainable environment

Outcome # 1

1. Outcome Target

New fundamental or Applied knowledge

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 103 - Management of Saline and Sodic Soils and Salinity
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 121 - Management of Range Resources
- 122 - Management and Control of Forest and Range Fires
- 123 - Management and Sustainability of Forest Resources
- 125 - Agroforestry
- 132 - Weather and Climate
- 133 - Pollution Prevention and Mitigation
- 135 - Aquatic and Terrestrial Wildlife
- 136 - Conservation of Biological Diversity
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 216 - Integrated Pest Management Systems

4. Associated Institute Type(s)

- 1862 Research

Outcome # 2

1. Outcome Target

Improved skills of students, post-doctorate, and stakeholders

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 103 - Management of Saline and Sodic Soils and Salinity
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 121 - Management of Range Resources

- 122 - Management and Control of Forest and Range Fires
- 123 - Management and Sustainability of Forest Resources
- 125 - Agroforestry
- 132 - Weather and Climate
- 133 - Pollution Prevention and Mitigation
- 135 - Aquatic and Terrestrial Wildlife
- 136 - Conservation of Biological Diversity
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 216 - Integrated Pest Management Systems

4. Associated Institute Type(s)

- 1862 Research

Outcome # 3

1. Outcome Target

New or improved methods

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 103 - Management of Saline and Sodic Soils and Salinity
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 121 - Management of Range Resources
- 122 - Management and Control of Forest and Range Fires
- 123 - Management and Sustainability of Forest Resources
- 125 - Agroforestry
- 133 - Pollution Prevention and Mitigation
- 136 - Conservation of Biological Diversity
- 216 - Integrated Pest Management Systems

4. Associated Institute Type(s)

- 1862 Research

Outcome # 4

1. Outcome Target

Adopt and use new methods or improved technology

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 103 - Management of Saline and Sodic Soils and Salinity
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 121 - Management of Range Resources
- 122 - Management and Control of Forest and Range Fires
- 123 - Management and Sustainability of Forest Resources
- 125 - Agroforestry
- 133 - Pollution Prevention and Mitigation
- 135 - Aquatic and Terrestrial Wildlife
- 136 - Conservation of Biological Diversity
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 216 - Integrated Pest Management Systems

4. Associated Institute Type(s)

- 1862 Research

Outcome # 5

1. Outcome Target

Actively apply practical policy and decision-making knowledge

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 103 - Management of Saline and Sodic Soils and Salinity
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 121 - Management of Range Resources
- 122 - Management and Control of Forest and Range Fires
- 123 - Management and Sustainability of Forest Resources
- 132 - Weather and Climate
- 133 - Pollution Prevention and Mitigation
- 135 - Aquatic and Terrestrial Wildlife
- 136 - Conservation of Biological Diversity
- 216 - Integrated Pest Management Systems

4. Associated Institute Type(s)

- 1862 Research

Outcome # 6

1. Outcome Target

Increase economic competitiveness

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 103 - Management of Saline and Sodic Soils and Salinity
- 111 - Conservation and Efficient Use of Water
- 121 - Management of Range Resources
- 122 - Management and Control of Forest and Range Fires
- 123 - Management and Sustainability of Forest Resources
- 125 - Agroforestry
- 216 - Integrated Pest Management Systems

4. Associated Institute Type(s)

- 1862 Research

Outcome # 7

1. Outcome Target

Improve water quality and a sustainable environment

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 103 - Management of Saline and Sodic Soils and Salinity
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 121 - Management of Range Resources
- 122 - Management and Control of Forest and Range Fires
- 123 - Management and Sustainability of Forest Resources
- 125 - Agroforestry

- 132 - Weather and Climate
- 133 - Pollution Prevention and Mitigation
- 135 - Aquatic and Terrestrial Wildlife
- 136 - Conservation of Biological Diversity

4. Associated Institute Type(s)

- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Competing Programmatic Challenges
- Other (Budgetary Restraints)

Description

Another year of State budget shortfalls continue to narrow the breadth of NAES's research programs. Fewer research projects will be supported and recruiting graduate students will be difficult.

The Experiment Station is still trying to recover from the 31 hard money positions lost after the 2010 circulation review. The natural resources and environmental science program is also facing the loss of two soil scientists. Their replacement will require a minimum of one year to recruit, hire and establish research programs that contribute to NAES's mission.

The circular review has also produced a number of administrative issues that contribute to the outcomes of our natural resources and environmental science program: the potential merger with Cooperative Extension, all faculty changing from 12 month to 9 month appointments, and the uncertainty regarding administrative changes (Dean/Director).

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Annual evaluations are conducted on each funded project and continuation of a multi-year project is contingent on appropriate accomplishments the previous year. Stakeholder input is obtained through involvement by stakeholders on review panels. CABNR/NAES will use the "Outcomes" as our measure of success for projects that have concluded.

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Nutrition and Health

2. Brief summary about Planned Program

The citizens of Nevada lead the nation in health concerns related to obesity, tobacco, and alcohol use and have a high incidence of diet-related chronic illnesses such as cardiovascular disease and diabetes. A healthier population through improved diet is a critical public health goal.

NAES research is focusing on nutritional intervention in the treatment of cancer, weight management programs for the undeserved, evaluating the beneficial effect of functional foods, studying school education programs on children's nutrition, and studying youth development.

3. Program existence : Mature (More than five years)

4. Program duration : Medium Term (One to five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
133	Pollution Prevention and Mitigation			25%	
134	Outdoor Recreation			10%	
609	Economic Theory and Methods			8%	
702	Requirements and Function of Nutrients and Other Food Components			25%	
703	Nutrition Education and Behavior			18%	
721	Insects and Other Pests Affecting Humans			6%	
722	Zoonotic Diseases and Parasites Affecting Humans			8%	
	Total			100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

According to the Nevada Hospital Association, over 60 percent of hospital costs in Nevada are directly attributable to lifestyle or behavioral choices such as smoking, chronic drinking, poor diet, poor

weight management, and lack of exercise. The leading cause of death in Nevada is heart disease, followed by cancer, respiratory disease, stroke, and motor vehicle accidents. Further, deaths from liver disease, lung cancer, and pulmonary disease are among the highest in the country. This is a reflection of the higher number of smokers and the high rate of chronic drinking.

The Behavioral Risk Factor Survey (BRFS) provides estimates of high-risk behaviors among the adult population in the U.S. The Center for Disease Control has coordinated the survey since 1982. Since 1991, Nevada has participated in this survey. Obesity is associated with a number of chronic diseases including coronary heart disease, diabetes, and cancer. 20 to 25 percent of Nevadans are at risk for being overweight. Males, older adults and those with lower education levels are more likely to be overweight.

Dietary characteristics, including dietary fat and fruit and vegetable intake were assessed also. Dietary fat was assessed using a series of questions regarding the frequency of eating certain types of high-fat foods. This information was then used to identify those at the highest risk with regard to total fat intake. Those with the highest intake, defined here as those who fell above the 75th percentile, include males, younger adults, and those with less education. Residents in the rural counties reported a slightly higher intake as well; 29 percent of rural respondents fall above the 75th percentile compared to 20 percent in Washoe County and 27 percent in Clark County. Further, it is estimated that 76 percent of Nevadans do not meet the National Cancer Institute recommendation of five servings of fruits and vegetables each day. Those with an income less than \$20,000 and young adults are least likely to meet this goal.

Ongoing programming to address lifestyle and behavioral choices have focused on prevention of heart disease, diabetes obesity and delayed early childhood development. The faith community and physicians are used to reach populations at risk for heart disease.

Although most data is derived from adults, food habits are established early in life. Needs assessment data indicate that families with limited resources are at high risk for poor nutrition that may put them at immediate risk to the cognitive and physical development of their children, and long-term risk for chronic diseases such as heart disease, diabetes, and cancer. While many agencies/organizations provide nutrition education to this clientele, there is no statewide mechanism to facilitate programs for families with limited resources. Thus the Nevada Nutrition Network, including representatives from all Nevada agencies/organizations that provide nutrition education, was formed to develop a statewide Food Stamp Nutrition Education Plan to increase the consumption of low-fat, calcium-rich foods by school-age children, initially focusing on adolescent girls (12-15 years) since they appear to be at greater risk. Focus groups have helped shape the educational program, which is currently being designed for implementation and evaluation.

Nevada's senior population has increased nearly twice as fast as the state's population over the past ten years, with 61 percent of senior citizens residing in Clark County. Health concerns largely relate to the high cost of health care providers, medication and health insurance. Other health concerns include availability and quality of health care, including the availability of program and services which are prevention oriented.

It is estimated that 20 percent of males, 17 percent of females, and 25 percent of children in Nevada are medically uninsured. These children are less likely to receive routine or preventive medical care. Further, when a family member is ill, an inability to pay often prevents them from seeking care until the illness has become very serious. Nine out of every ten pediatricians surveyed indicated that children from low-income families have difficulty accessing primary health care, citing inability to pay as the most important reason. To improve health care, almost half were in favor of school-based clinics.

Early and high quality prenatal care is an effective means of improving pregnancy outcome. It is estimated that for every dollar spent on prenatal care, ten dollars are saved on infant care. In Nevada, unfortunately, only 71 percent of pregnant women receive adequate prenatal care. According to the American Public Health Association, this is among the worst rates in the country (44th), although the proportion of women receiving care during their first trimester has increased from 24.7 percent in 1984 to 28 percent in 1990. Household income is believed to be the single most significant barrier to receiving early and effective prenatal care.

Low birth weight is defined as a birth weight of less than 2500 grams. Mothers most likely to have low-birth weight infants are also more likely to live in poverty, receive little or no prenatal care, have a low

level of education, be unmarried, and be a member of a racial minority.

2. Scope of the Program

- In-State Research
- Multistate Research
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

One of the primary internal linkage is the Nevada Nutrition Network, which includes representatives from UNCE, NAES, NV Bureau of Family Health Services, NV Dept. of Education, Dairy Council of Utah/Nevada, NV Dept of Human Resources, Clark County School District, Washoe Health System, NV Dept of Human Resources, WIC, Inter-Tribal Council of Nevada, Inc., Clark County Health District, Community Food Bank of Clark County, and Sierra Health Services. This group has been formed to conduct nutrition education in middle schools. These same groups are included in other nutrition education programs.

Multi-state research programs will be governed through the Western Association of Agricultural Experiment Station Directors (WAAESD), involving peer and program review and subsequent recommendations by the Research Implementation Committee (RIC), a sub-committee of WAAESD.

Coordination of multi-state extension, research and integrated research and extension activities will be governed by the Western Extension Directors (WED) and WAAESD. A peer and program review committee with broad based multi-functional representation entitled the Multi State Review Committee will conduct the initial review and make recommendations to WED and WAAESD.

2. Ultimate goal(s) of this Program

Examples of strategies and potential action and approaches to achieve the goal:

- Research to better understand and education that focuses on establishing healthy lifestyle habits, including diet, exercise and prevention of smoking among the following groups: Biochemical and behavioral research to elucidate factors relating to chronic diseases, including but not limited to obesity, diabetes, heart disease, pulmonary disease and cancer, coupled with education to reduce the burden of the disease among populations displaying their greatest incidence.
 - First-time parents gain an understanding of vital pre- and post-natal needs of mothers and their infants through behavior-focused education.
 - Biochemical and behavioral research to elucidate factors relating to chronic diseases, including but not limited to obesity, diabetes, heart disease, pulmonary disease and cancer, coupled with education to reduce the burden of the disease among populations displaying their greatest incidence.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890

Year	Extension		Research	
	1862	1890	1862	1890
2014	0.0	0.0	2.0	0.0
2015	0.0	0.0	2.0	0.0
2016	0.0	0.0	2.5	0.0
2017	0.0	0.0	2.5	0.0
2018	0.0	0.0	3.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Our POW goal is to conduct research to better understand healthy life style habits, and educational programs that focuses on healthy life style habits.

NAES research is focusing on nutritional intervention in the treatment of cancer, evaluating the beneficial effect of functional foods, studying school education programs on children's nutrition, and studying parameters that prevent obesity in high risk families.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> ● Education Class ● One-on-One Intervention ● Other 1 (Town Hall Meetings) ● Other 2 (Field Lab Open Houses) 	<ul style="list-style-type: none"> ● Public Service Announcement ● Newsletters ● TV Media Programs ● Web sites other than eXtension

3. Description of targeted audience

The target audience for educational programming is consumers, health care personnel, agency personnel, local school boards, and nutrition support groups.

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Peer reviewed scientific publications, publications in health and nutrition organization publications, presentations at scientific meetings, presentations at stakeholder, agency, school board, Native American, and local governmental meetings.
- Newsletters Produced
- Leveraged Research Projects
- Web Sites Created or Updated
- Number of Graduate Students or Post-Doctorates Trained
- Number of Undergraduate Students Involved in Research
- Demonstrations and Workshops Conducted
- Manuals and Other Printed Instructional Materials Produced

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	New fundamental or Applied knowledge
2	Improved skills of students, post-doctorate, and stakeholders
3	New or improved methods
4	Actively apply practical policy and decision-making knowledge
5	Directly apply information from publications
6	Better quality of life
7	Safer food supply
8	Improved nutrition and health
9	Increased knowledge of decision-making, life skills, and positive life choices among youth and adults

Outcome # 1

1. Outcome Target

New fundamental or Applied knowledge

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 133 - Pollution Prevention and Mitigation
- 609 - Economic Theory and Methods
- 702 - Requirements and Function of Nutrients and Other Food Components
- 721 - Insects and Other Pests Affecting Humans
- 722 - Zoonotic Diseases and Parasites Affecting Humans

4. Associated Institute Type(s)

- 1862 Research

Outcome # 2

1. Outcome Target

Improved skills of students, post-doctorate, and stakeholders

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 133 - Pollution Prevention and Mitigation
- 134 - Outdoor Recreation
- 609 - Economic Theory and Methods
- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior
- 721 - Insects and Other Pests Affecting Humans
- 722 - Zoonotic Diseases and Parasites Affecting Humans

4. Associated Institute Type(s)

- 1862 Research

Outcome # 3

1. Outcome Target

New or improved methods

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 133 - Pollution Prevention and Mitigation
- 134 - Outdoor Recreation
- 609 - Economic Theory and Methods
- 703 - Nutrition Education and Behavior
- 721 - Insects and Other Pests Affecting Humans
- 722 - Zoonotic Diseases and Parasites Affecting Humans

4. Associated Institute Type(s)

- 1862 Research

Outcome # 4

1. Outcome Target

Actively apply practical policy and decision-making knowledge

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 133 - Pollution Prevention and Mitigation
- 609 - Economic Theory and Methods
- 703 - Nutrition Education and Behavior

4. Associated Institute Type(s)

- 1862 Research

Outcome # 5

1. Outcome Target

Directly apply information from publications

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 133 - Pollution Prevention and Mitigation
- 703 - Nutrition Education and Behavior

4. Associated Institute Type(s)

- 1862 Research

Outcome # 6

1. Outcome Target

Better quality of life

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 133 - Pollution Prevention and Mitigation
- 134 - Outdoor Recreation
- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior

4. Associated Institute Type(s)

- 1862 Research

Outcome # 7

1. Outcome Target

Safer food supply

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 133 - Pollution Prevention and Mitigation
- 703 - Nutrition Education and Behavior

4. Associated Institute Type(s)

- 1862 Research

Outcome # 8

1. Outcome Target

Improved nutrition and health

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior

4. Associated Institute Type(s)

- 1862 Research

Outcome # 9

1. Outcome Target

Increased knowledge of decision-making, life skills, and positive life choices among youth and adults

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 133 - Pollution Prevention and Mitigation
- 134 - Outdoor Recreation
- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior

4. Associated Institute Type(s)

- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Economy
- Appropriations changes

Description

Another year of State budget shortfalls continue to narrowed the breadth of NAES research programs. Fewer research projects will be supported and recruiting graduate students will be difficult.

The Experiment Station is still trying to recover from the 31 hard money positions lost after the 2010 circulation review. Until a number of critical areas are re-staffed our nutrition and health program will be diminished.

The department of Nutrition has endured a number of significant changes. Mainly, the absorption of remaining faculty retained after circular review. This action has diluted the department's primary focus of nutrition and dietetics to include agricultural and veterinary sciences. The nutrition and health program also suffered the loss of a jointly appointed obesity specialist when Cooperative Extension stopped financial support.

The circular review has also produced a number of administrative issues that contribute to the outcomes of our Ag program: the potential merger with Cooperative Extension, all faculty changing from 12 month to 9 month appointments, and the uncertainty regarding administrative changes (Dean/Director).

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Annual evaluations are conducted on each funded project and continuation of a multi-year project is contingent on appropriate accomplishments the previous year. Stakeholder input is obtained through involvement by stakeholders on review panels. CABNR/NAES will use the "Outcomes" as our measure of success for projects that have concluded.

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Economic Development with Emphasis in Rural Areas

2. Brief summary about Planned Program

For the state of Nevada and many counties in the state, federal agencies administer or own most of the land area. For the state of Nevada, approximately 84% of land is owned or administered by the federal government. While for the Nevada counties of Esmeralda, Lander, Lincoln, Nye, and White Pine, over 90% of the county's acreage is under federal control. Changes in public land management policies will impact Nevada's economies and its 17 counties.

With the expansion in legalized gaming throughout the nation and the nation's slow economic recovery, economic development leaders in the state of Nevada have made economic diversification a primary state and county economic development goal.

Often, changes in public land management policies are not researched or analyzed, especially consequences to the local economy and fiscal balances of government.

CABNR/NAES's applied and resource economists will continue to conduct economic analysis of various rural labor and public policy issues, research improving childcare and youth development in Nevada, and develop surveys in the field of willingness to pay. Research will continue in economic development through the economic development center and analysis and development of rural health care.

3. Program existence : Mature (More than five years)

4. Program duration : Medium Term (One to five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

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			8%	
122	Management and Control of Forest and Range Fires			15%	
213	Weeds Affecting Plants			7%	
401	Structures, Facilities, and General Purpose Farm Supplies			5%	
601	Economics of Agricultural Production and Farm Management			9%	
605	Natural Resource and Environmental Economics			8%	
607	Consumer Economics			4%	
608	Community Resource Planning and Development			33%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities			8%	
903	Communication, Education, and Information Delivery			3%	
	Total			100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

In 2010, the population of Nevada was 2,700,551 persons, representing a 95 percent increase from 1990. From April 1, 2000 to July 1, 2010 Nevada's population grew another 35.1% compare to the national average of 9.7%. The states' growth is the result of international migration with nearly a third of new residents coming from California. The statewide population density is 24.6 persons per square mile (the national average is 87.4 persons per square mile). The majority of the population resides in Clark County (72%) and Washoe County (15.6%) and these figures are expected to increase. The remainder of the state is sparsely populated with 11 counties considered frontier (less than 6 person/square mile), and four counties considered rural (more than 6 persons but less than 10/square mile). With nearly 90 percent of the states' population located in two metropolitan areas, Nevada is the tenth most urbanized state in the country.

The economic environment in which the Nevada economy operates will remain challenging in the near term as Nevada state government has experienced a \$1 billion projected revenue shortfall due to the economic down turn in 2008-2009 budget years. Additional revenue shortfalls of 34% or more are expected in budget years 2010-2011. These shortfalls will translate into dramatic reductions in government services and programs throughout the state, both in the short and long terms.

Nationally, US housing is down 45% and car sales down 37.6% from a year ago levels. Big ticket sales are down. Essential things, such as gasoline, are also down. These declines occurred even after gasoline prices returned to previous levels.

We may still see future declines, but the economy may start to bottom out if national spending returns with increased fiscal stimulus, monetary and financial reforms and a return to healthier credit

markets.

Economic impact studies and subsequent education and community leadership efforts will continue to be undertaken to help Nevada communities cope with their specific economic situations.

According to the 2010 U.S. Census Bureau, 11.9 percent of Nevadans live in poverty. The fastest growing segment of the population living in poverty is single women with dependent children. According to the 2010 U.S. Census Bureau, 24.6% of Nevadans were less than 18 years of age and 12% of Nevadans were older than 65 years of age.

Public education remains an important issue due to crowded classrooms and high dropout rates. The Nevada Literacy Coalition estimates that over a quarter of a million Nevada adults and youth lack adequate literacy skills. The coalition defines literacy as a person's possession of the essential skills and knowledge in speaking, reading, writing English and performing arithmetic operations, at levels which allow competent functioning. Among at-risk students, reading skills have been shown to be the best predictor of later successful adult adjustment. Nevada employers identify a lack of basic literacy skills as impacting the productivity of their companies.

Teens that drop out of high school face enormous odds for achieving financial success in life. Over their lifetime, high school dropouts will earn only about 75% as much as high school graduates, and less than half of what college graduates are likely to make during their life.

2. Scope of the Program

- In-State Research
- Multistate Research
- Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Because all of the educational efforts are both collaborative and community-based, internal and external linkages are extensive. Economic development efforts always include local formal and informal decision-makers, local government, state government, and frequently federal agencies, such as the Small Business Development Center. Most children, youth and family efforts involve UNCE and NAES faculty, local school districts, state agencies, juvenile justice system, parks and recreation departments, non-profit youth serving organizations and frequently local businesses.

Multi-state research programs will be governed through the Western Association of Agricultural Experiment Station Directors (WAAESD), involving peer and program review and subsequent recommendations by the Research Implementation Committee (RIC), a sub-committee of WAAESD.

Coordination of multi-state extension, research and integrated research and extension activities will be governed by the Western Extension Directors (WED) and WAAESD. A peer and program review committee with broad based multi-functional representation entitled the Multi State Review Committee will conduct the initial review and make recommendations to WED and WAAESD.

2. Ultimate goal(s) of this Program

Strategies and potential action and approaches to achieve our goals include:

- Research and subsequent education for decision-makers on the changing economic dynamics and their implications for their communities.
- Leadership development opportunities for community decision-makers.
- The creation, implementation and evaluation of community decision-making models.
- Education and evaluation research targeting the most vulnerable youth to increase their capacity

related to life skills.

- Research and education on literacy.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2014	0.0	0.0	2.0	0.0
2015	0.0	0.0	2.0	0.0
2016	0.0	0.0	2.5	0.0
2017	0.0	0.0	2.5	0.0
2018	0.0	0.0	3.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Nevada scientists will continue to conduct economic analysis of various rural labor and public policy issues, rangeland and forestry restoration, and research improving child and elder care in Nevada. Research will continue in economic development through the university's Center for Economic Development and analysis and development of rural health care.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> • Education Class • Workshop • One-on-One Intervention • Other 1 (Town Hall Meetings) • Other 2 (Field Lab Open Houses) 	<ul style="list-style-type: none"> • Public Service Announcement • Newsletters • TV Media Programs • Web sites other than eXtension

3. Description of targeted audience

Educators, community leaders, decision-makers, parents, native american organizations and health care organizations.

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
 - Number of patents submitted
 - Number of peer reviewed publications
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

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.
 - Newsletters Produced
 - Web Sites Created or Updated
 - Number of Graduate Students or Post-Doctorates Trained
 - Leveraged Research Projects
 - Manuals and other printed instructional materials produced
 - Number of Undergraduate Students Involved in Research
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

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

Outcome # 1

1. Outcome Target

New fundamental or Applied knowledge

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management
- 122 - Management and Control of Forest and Range Fires
- 213 - Weeds Affecting Plants
- 401 - Structures, Facilities, and General Purpose Farm Supplies
- 601 - Economics of Agricultural Production and Farm Management
- 605 - Natural Resource and Environmental Economics
- 607 - Consumer Economics
- 608 - Community Resource Planning and Development
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities
- 903 - Communication, Education, and Information Delivery

4. Associated Institute Type(s)

- 1862 Research

Outcome # 2

1. Outcome Target

Improved skills of students, post-doctorate, and stakeholders

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management
- 122 - Management and Control of Forest and Range Fires
- 213 - Weeds Affecting Plants
- 401 - Structures, Facilities, and General Purpose Farm Supplies
- 601 - Economics of Agricultural Production and Farm Management
- 605 - Natural Resource and Environmental Economics
- 607 - Consumer Economics
- 608 - Community Resource Planning and Development
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities

- 903 - Communication, Education, and Information Delivery

4. Associated Institute Type(s)

- 1862 Research

Outcome # 3

1. Outcome Target

New improved methods

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management
- 122 - Management and Control of Forest and Range Fires
- 213 - Weeds Affecting Plants
- 401 - Structures, Facilities, and General Purpose Farm Supplies
- 601 - Economics of Agricultural Production and Farm Management
- 605 - Natural Resource and Environmental Economics
- 607 - Consumer Economics
- 608 - Community Resource Planning and Development
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities
- 903 - Communication, Education, and Information Delivery

4. Associated Institute Type(s)

- 1862 Research

Outcome # 4

1. Outcome Target

Actively apply practical policy and decision-making knowledge

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management
- 122 - Management and Control of Forest and Range Fires
- 601 - Economics of Agricultural Production and Farm Management
- 605 - Natural Resource and Environmental Economics

- 607 - Consumer Economics
- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Research

Outcome # 5

1. Outcome Target

Apply improved fundamental or applied knowledge

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management
- 122 - Management and Control of Forest and Range Fires
- 213 - Weeds Affecting Plants
- 401 - Structures, Facilities, and General Purpose Farm Supplies
- 601 - Economics of Agricultural Production and Farm Management
- 605 - Natural Resource and Environmental Economics
- 607 - Consumer Economics
- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Research

Outcome # 6

1. Outcome Target

Increase economic competitiveness in rural communities

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management
- 401 - Structures, Facilities, and General Purpose Farm Supplies
- 601 - Economics of Agricultural Production and Farm Management
- 605 - Natural Resource and Environmental Economics
- 607 - Consumer Economics

- 608 - Community Resource Planning and Development
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities

4. Associated Institute Type(s)

- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

Another year of State budget shortfalls continue to narrowed the breadth of NAES's research programs. Fewer research projects will be supported and recruiting graduate students will be difficult.

The Experiment Station is still trying to recover from the 31 hard money positions lost after the 2010 circulation review. Until a number of critical areas are re-staffed our economic development program will be severely diminished.

Our economic development program was one of the hardest hit after circular review. The department Resource Economics was closed and with that the loss of 11 faculty positions. Three faculty were retained and transferred to the College of Business while holding partial experiment station appointments. This has resulted in very limited output.

The circular review has also produced a number of administrative issues that contribute to the outcomes of our Ag program: the potential merger with Cooperative Extension, all faculty changing from 12 month to 9 month appointments, and the uncertainty regarding administrative changes (Dean/Director).

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Annual evaluations are conducted on each funded project and continuation of a multi-year project is contingent on appropriate accomplishments the previous year. Stakeholder input is obtained through involvement by stakeholders on review panels. CABNR/NAES will use the "Outcomes" as our measure of success for projects that have concluded.

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Sustainable Energy

2. Brief summary about Planned Program

Dependence on imported petroleum, as well as the consequences from burning fossil fuels has increased demand for alternative energy sources in the United States. Competition between food crops and biofuel crops has, however, been an increasing concern, and almost 86% of the global water footprint is linked to food production. Thus, the search for sustainable biofuel crops that can be grown on Nevada's rangelands (typically unable to support food production due to soil quality or water availability) is increasingly attractive.

The NAES research program brings together plant biochemists and ecologists and economists to study basic and applied approaches for the efficient production of non-food feedstocks from forested and rangelands with limited freshwater availability as sustainable and renewable sources for biofuel generation within regional production systems.

NAES has complementary expertise in the production of biomass and biofuels from a diverse set of feedstocks. NAES scientists are currently focused on: selection and optimization of terrestrial and aquatic biofuel feedstocks; collection and efficient use of herbaceous, woody and waste stream biomass feedstocks; and determination of the economically optimal solutions when considering alternative locations, transport costs, size and sunk costs; and market opportunities for biofuel feedstock production, energy production and delivery.

3. Program existence : Intermediate (One to five years)

4. Program duration : Medium Term (One to five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants			25%	
204	Plant Product Quality and Utility (Preharvest)			25%	
206	Basic Plant Biology			25%	
511	New and Improved Non-Food Products and Processes			25%	
	Total			100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

The current White House administration has a goal of producing 20% of its transportation fuels from renewable sources, including biomass, by 2030. Nevada has a law that will require investor owned utilities to use wind, sun and cleaner-burning fuels to produce one fifth of the state's electricity by 2015, a standard that advocates call among the most aggressive in the country.

Priorities include making significant improvements in biomass collection, storage, pre-processing, conversion, process economics, economic policy, agronomics, crop development, product quality and marketing.

2. Scope of the Program

- In-State Research
- Multistate Research
- Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

As the U.S. seeks to reduce its dependence on petroleum products, demand for bio-based products will steadily increase; funding is available for renewable resources with federal, state and industry support only increasing; petroleum supplies will be limited due to increasing national and global demand.

2. Ultimate goal(s) of this Program

It is NAES goal to build a new bio-based economic sector on the existing foundation of agriculture, forestry and natural resources, backed by the understanding and evaluation of the economic impacts of adoption of renewable energy sources. Basically, to develop real science answers to known and as yet unknown questions.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2014	0.0	0.0	2.5	0.0
2015	0.0	0.0	2.5	0.0
2016	0.0	0.0	3.0	0.0
2017	0.0	0.0	3.5	0.0
2018	0.0	0.0	3.5	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Scientists are currently determining best algal species (survival and growth rates, fat and starch content) for production of oils that will then be processed into biofuels. Investigation into Nevada's highly prolific rabbit brush as a good candidate for production of industrial (i.e., rubber, plastics, coatings, lubricants and adhesives) and energy feedstocks (i.e. biodiesel and cellulosic-based liquid fuels. Camelina is being evaluated as an alternative crop for biofuel and other plant derived products.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> ● Education Class ● Workshop ● Demonstrations ● Other 1 (Town Hall Meetings) ● Other 2 (Field Lab Open Houses) 	<ul style="list-style-type: none"> ● Public Service Announcement ● Newsletters ● TV Media Programs ● Web sites other than eXtension

3. Description of targeted audience

Those most affected by this research include the general public, energy and chemical industry, and potential producers.

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Peer reviewed journal articles, publications in commodity group publications, presentations at scientific meetings, presentations at stakeholder, Native American and agency meetings.
- Demonstrations and Field Days Conducted
- Number of Graduate Students or Post-Doctorates Trained
- Number of Undergraduate Students Involved in Research
- Research Projects Conducted
- Leveraged Research Projects
- Web Sites Created or Updated

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	New fundamental or Applied knowledge
2	Improved skills of students, post-doctorate, and stakeholders
3	New or improved methods
4	Adopt and use new methods or improved technology
5	Use new or improved plant varieties
6	Increase economic competitiveness
7	Improve productivity in a semi-arid environment
8	Adopt new improved skills

Outcome # 1

1. Outcome Target

New fundamental or Applied knowledge

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)
- 206 - Basic Plant Biology
- 511 - New and Improved Non-Food Products and Processes

4. Associated Institute Type(s)

- 1862 Research

Outcome # 2

1. Outcome Target

Improved skills of students, post-doctorate, and stakeholders

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)
- 206 - Basic Plant Biology
- 511 - New and Improved Non-Food Products and Processes

4. Associated Institute Type(s)

- 1862 Research

Outcome # 3

1. Outcome Target

New or improved methods

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)
- 206 - Basic Plant Biology
- 511 - New and Improved Non-Food Products and Processes

4. Associated Institute Type(s)

- 1862 Research

Outcome # 4

1. Outcome Target

Adopt and use new methods or improved technology

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)
- 511 - New and Improved Non-Food Products and Processes

4. Associated Institute Type(s)

- 1862 Research

Outcome # 5

1. Outcome Target

Use new or improved plant varieties

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)
- 511 - New and Improved Non-Food Products and Processes

4. Associated Institute Type(s)

- 1862 Research

Outcome # 6

1. Outcome Target

Increase economic competitiveness

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)
- 511 - New and Improved Non-Food Products and Processes

4. Associated Institute Type(s)

- 1862 Research

Outcome # 7

1. Outcome Target

Improve productivity in a semi-arid environment

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)
- 206 - Basic Plant Biology
- 511 - New and Improved Non-Food Products and Processes

4. Associated Institute Type(s)

- 1862 Research

Outcome # 8

1. Outcome Target

Adopt new improved skills

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 204 - Plant Product Quality and Utility (Preharvest)
- 511 - New and Improved Non-Food Products and Processes

4. Associated Institute Type(s)

- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Economy
- Appropriations changes

Description

Current State budget shortfalls will narrow the breadth of research programs in NAES. Fewer research projects will be supported, faculty FTE were lost, and recruiting graduate students will be difficult. In addition, due to the Governor's hiring freeze and State budget shortfalls the College/NAES is prevented from moving forward and determining the areas of research most important to the state, nation and internationally.

Current cutbacks to our programs will also affect how we determine the most important direction of the College/NAES to remain competitive with current research issues. Several of our senior faculty will be retiring and job security is scaring others away. The question is will cutbacks affect our ability to fill these positions or will we be forced to cutback our research efforts to concentrate on teaching our courses. The funding shortfall has also affected the collaborations between NAES and the University of Nevada Cooperative Extension through the loss of most joint appointments. UNCE is also facing dramatic cuts in personnel over the next two years, which will undoubtedly affect NAES's stakeholder input and dissemination of results.

All of these issues will determine the future of our research.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Annual evaluations are conducted on each funded project and continuation of a multi-year project is contingent on appropriate accomplishments the previous year. Stakeholder input is obtained through involvement by stakeholders on review panels. CABNR/NAES will use the "Outcomes" as our measure of success for projects that have concluded.

V(A). Planned Program (Summary)

Program # 7

1. Name of the Planned Program

Food Safety

2. Brief summary about Planned Program

In 2012, it is estimated that more than 33 million people become ill in the United States as a direct result of foodborne illness. Over 9,000 people died. The cost in lost wages, insurance claims and medical bills amounts to between \$7.7 and \$23 billion a year. Recently, food safety issues have gained national attention. They have been the subject of numerous articles in the media, including themes for TV sitcoms.

The NAES research programs will encompass a broad range of approaches from basic cellular and molecular research to cost benefit analysis and education programs with special attention to underserved communities. NAES has complementary expertise in food safety that integrates knowledge and methods from animal science, food science, and resource economics.

Nevada's food safety programs focus efforts toward: a zoonotic disease/public health program (human-animal disease transfer), bio-terrorism/natural disaster emergency management program, reducing care facilities food-borne illnesses, and regulations and liability educational programs designed for the small producers of Nevada.

3. Program existence : Intermediate (One to five years)

4. Program duration : Medium Term (One to five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
308	Improved Animal Products (Before Harvest)			5%	
601	Economics of Agricultural Production and Farm Management			63%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins			2%	
723	Hazards to Human Health and Safety			20%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities			10%	
	Total			100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

A number of endemic zoonotic diseases are found in the Great Basin Area. Emerging and foreign zoonotic disease may become a threat to animal and humans through natural, unintentional or intentional introduction. Bovine Spongiform Encephalopathy (BSE), West Nile virus, and highly pathogenic avian influenza are examples of zoonoses that are major concerns to different sectors of Nevada's population.

Emergency management planning and response has been very important for many years in the fire fighting sector and in the states with serious hurricane events. Only in the past 10 years has there been significant development in other arenas. The events of 9/11/01, hurricanes Katrina and Rita, and the fires in Nevada in 2007 have driven home the need for a broad based multi-hazard response capability.

Because of Nevada's growing elderly and young populations and the economic dependency on food service related tourism, we are particularly vulnerable for food-borne illness. And according to previous research a large educational gap also exists between care givers and their understanding in food-borne illness prevention.

The majority of agricultural operations in Nevada are considered small-scale, earning less than \$10,000/year, and are very interested in adding value to products. These producers have expressed a desire to learn about food safety regulations, farm and ranch safety inspections, actions to minimize food safety risk, and steps that can be taken to deal with legal risk following a food safety violation.

Priorities include insuring the safety of Nevada's food supplies while striving to improved communication between all the entities within our state that are held accountable for food safety and security; providing scientific expertise to the international community; addressing the educational needs Nevada's caregivers by focusing on changing false beliefs about food preparation, and storage; provide workshops designs for the small-scale producer.

2. Scope of the Program

- In-State Research
- Multistate Research
- Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

The NAES will continue to partner with State of Nevada Department of Health, Nevada Food Safety Task Force, and Cooperative Extension on these efforts. Federal legislation mandating that local and state emergency response plans incorporate companion animal modules prior to federal funding. Food safety scientists will serve as catalysts for systems changes in schools, on ranches and in industry around standards for food safety.

2. Ultimate goal(s) of this Program

To increase the understanding of disease processes, control of disease, reproduction and development, development of new animal models or animals with new genetic capabilities, and effect of toxins on animal and human health and on control of disease. To improve animal health and well-being, increase food safety, and prevent the spread of disease between humans and animals, to increase consumer confidence in animal products, while sustaining public health and decreasing economic loss for

producers, to improve reproductive efficiency in large domestic animals, to develop vaccines and immunological interventions to protect large domestic animals from disease. To train Nevada's producers on state food safety regulations and methods for satisfying these requirements.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2014	0.0	0.0	1.0	0.0
2015	0.0	0.0	1.5	0.0
2016	0.0	0.0	1.5	0.0
2017	0.0	0.0	2.0	0.0
2018	0.0	0.0	2.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Provide agricultural producers in Nevada with information about the risks associated with food safety in terms of direct marketing, including legal, financial, and marketing risks. In-depth cattle handling workshop are being performed that targets the Spanish speaking workers to increased production and improved animal health through decreased stress.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> ● Education Class ● Workshop ● Demonstrations ● Other 1 (Town Hall Meetings) ● Other 2 (Field Lab Open Houses) 	<ul style="list-style-type: none"> ● Public Service Announcement ● Newsletters ● TV Media Programs ● Web sites other than eXtension

3. Description of targeted audience

This program is targeting Nevada's agricultural producers with emphasis on Spanish speakers.

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Peer reviewed journal articles, publications in commodity group publications, presentations at scientific meetings, presentations at stakeholder, Native American and agency meetings.
- Research Projects
- Number of Graduate Students or Post-Doctorates Trained
- Number of Undergraduate Students Involved in Research
- Leveraged Research Projects
- Web Sites Created or Updated

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	New fundamental or Applied knowledge
2	Improved skills of students, post-doctorate, and stakeholders
3	New or improved methods
4	Actively apply practical policy and decision-making knowledge
5	Increased knowledge of decision-making, life skills, and positive life choices among youth and adults
6	Directly apply information from publications
7	Safer food supply

Outcome # 1

1. Outcome Target

New fundamental or Applied knowledge

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 308 - Improved Animal Products (Before Harvest)
- 601 - Economics of Agricultural Production and Farm Management
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
- 723 - Hazards to Human Health and Safety
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities

4. Associated Institute Type(s)

- 1862 Research

Outcome # 2

1. Outcome Target

Improved skills of students, post-doctorate, and stakeholders

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 308 - Improved Animal Products (Before Harvest)
- 601 - Economics of Agricultural Production and Farm Management
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
- 723 - Hazards to Human Health and Safety
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities

4. Associated Institute Type(s)

- 1862 Research

Outcome # 3

1. Outcome Target

New or improved methods

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 308 - Improved Animal Products (Before Harvest)
- 601 - Economics of Agricultural Production and Farm Management
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
- 723 - Hazards to Human Health and Safety

4. Associated Institute Type(s)

- 1862 Research

Outcome # 4

1. Outcome Target

Actively apply practical policy and decision-making knowledge

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
- 723 - Hazards to Human Health and Safety
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities

4. Associated Institute Type(s)

- 1862 Research

Outcome # 5

1. Outcome Target

Increased knowledge of decision-making, life skills, and positive life choices among youth and adults

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally

Occurring Toxins

- 723 - Hazards to Human Health and Safety

4. Associated Institute Type(s)

- 1862 Research

Outcome # 6

1. Outcome Target

Directly apply information from publications

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
- 723 - Hazards to Human Health and Safety
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities

4. Associated Institute Type(s)

- 1862 Research

Outcome # 7

1. Outcome Target

Safer food supply

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 308 - Improved Animal Products (Before Harvest)
- 601 - Economics of Agricultural Production and Farm Management
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
- 723 - Hazards to Human Health and Safety
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities

4. Associated Institute Type(s)

- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Economy
- Appropriations changes

Description

Current State budget shortfalls will narrow the breadth of research programs in NAES. Fewer research projects will be supported, faculty FTE were lost, and recruiting graduate students will be difficult. In addition, due to the Governor's hiring freeze and State budget shortfalls the College/NAES is prevented from moving forward and determining the areas of research most important to the state, nation and internationally.

Current cutbacks to our programs will also affect how we determine the most important direction of the College/NAES to remain competitive with current research issues. Several of our senior faculty will be retiring and job security is scaring others away. The question is will cutbacks affect our ability to fill these positions or will we be forced to cutback our research efforts to concentrate on teaching our courses. The funding shortfall has also affected the collaborations between NAES and the University of Nevada Cooperative Extension through the loss of most joint appointments. UNCE is also facing dramatic cuts in personnel over the next two years, which will undoubtedly affect NAES's stakeholder input and dissemination of results.

All of these issues will determine the future of our research.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Annual evaluations are conducted on each funded project and continuation of a multi-year project is contingent on appropriate accomplishments the previous year. Stakeholder input is obtained through involvement by stakeholders on review panels. CABNR/NAES will use the "Outcomes" as our measure of success for projects that have concluded.

V(A). Planned Program (Summary)

Program # 8

1. Name of the Planned Program

Childhood Obesity

2. Brief summary about Planned Program

It has been shown many times that academic achievement for children is vital to their success in life. Those that do well in school have greater opportunities for post-secondary education, and later have better prospects for employment. One of the major factors that can affect a child's academic achievement is their health status. And, according to a new report by the Nevada Institute for Children's Research and Policy at UNLV, one-third of Nevada's children are overweight. Consequently, to increase the likelihood for academic success in children, CABNR/NAES is addressing their health concerns. Preventative care is crucial to a child's ability to succeed in school.

CABNR/NAES has been making educational investments to insure healthy futures for families and youth for many years. Programs in nutrition and childhood obesity have long focused on helping citizens make food choices that lead to good health. Research conducted for this program will address issues of educational methodology, community development for healthier environments, and analyses of State & Federal programs in Nevada. Our partnerships with the University's Medical School and Cooperative Extension also strengthen our capacity to address health care.

3. Program existence : Intermediate (One to five years)

4. Program duration : Medium Term (One to five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
134	Outdoor Recreation			10%	
703	Nutrition Education and Behavior			60%	
724	Healthy Lifestyle			20%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities			4%	
901	Program and Project Design, and Statistics			6%	
	Total			100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Affecting two thirds of the Nevada adult population, overweight and obesity constitute currently the state's most prevalent modifiable health risk factor. Obese people have at least twice the risk of normal weight persons for diabetes mellitus, hypertension, dyslipidemia, heart disease, stroke, sleep apnea, debilitating osteoarthritis, and cancer. Among all populations, children are the fastest growing group affected by this epidemic. In spite of numerous calls to action targeting the health care system and the society, the data show no improvement in the obesity epidemic.

Priorities include preventative measures programs, cost-effective educational programs, and program effectiveness analysis.

2. Scope of the Program

- In-State Research
- Multistate Research
- Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

The Youth Risk Behavior Surveillance System found obesity and overweight rate in Nevada are 34.2% in children 10-17 year of age (ranked 11th highest rate among U.S. states). In addition, the most recent National Health and Nutrition Examination Survey 2009-2010 indicated that approximately 10% of Nevadans infants and toddlers are obese.

Child Nutrition Act is the legislative centerpiece of First Lady Michelle Obama's "Let's Move!" campaign to end childhood obesity within a generation. The Obama Administration has proposed a historic investment of an additional \$10 billion over ten years starting in 2011. The national Improved Nutrition and Physical Active Act grants will continue to support research. The Nevada Nutrition Assistance Consortium is fully supporting research that provides nutritional education to Nevadans.

2. Ultimate goal(s) of this Program

Reduce the number of children that are obese and that are affected by secondary diseases from obesity. Reduce childhood obesity and that are affected by secondary diseases from obesity while inspiring all young people in Nevada to develop lifelong, healthy habits.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2014	0.0	0.0	1.0	0.0
2015	0.0	0.0	1.0	0.0

Year	Extension		Research	
	1862	1890	1862	1890
2016	0.0	0.0	1.5	0.0
2017	0.0	0.0	2.0	0.0
2018	0.0	0.0	2.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Scientists are developing a community weight control model for use in Nevada's city clinics. Investigation has begun into the effects of distance to parks, trails, food outlets, etc. in relation to amount of vegetables consumed and obesity. The Washoe County School District has implemented a Student Wellness Policy; researchers are identifying best practices at the school and classroom level, and reporting on its execution and effectiveness.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> ● Education Class ● Workshop ● Demonstrations ● Other 1 (Town Hall Meetings) ● Other 2 (Field Lab Open Houses) 	<ul style="list-style-type: none"> ● Public Service Announcement ● Newsletters ● TV Media Programs ● Web sites other than eXtension

3. Description of targeted audience

Educators, health professionals, general public and policy-makers.

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Peer reviewed journal articles, publications in commodity group publications, presentations at scientific meetings, presentations at stakeholder, Native American and agency meetings.
- Newsletters Produced
- Research Projects Conducted
- Web Sites Created or Updated
- Number of Graduate Students or Post-Doctorates Trained
- Number of Undergraduate Students Involved in Research
- Demonstrations and Workshops Conducted
- Leveraged Research Projects
- Manuals and Other Printed Instructional Materials Produced

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	New fundamental or Applied knowledge
2	Improved skills of students, post-doctorate, and stakeholders
3	Directly apply information from publications
4	Increased knowledge of decision-making, life skills, and positive life choices among youth and adults
5	Reduce obesity and improved nutrition and health

Outcome # 1

1. Outcome Target

New fundamental or Applied knowledge

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 134 - Outdoor Recreation
- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities
- 901 - Program and Project Design, and Statistics

4. Associated Institute Type(s)

- 1862 Research

Outcome # 2

1. Outcome Target

Improved skills of students, post-doctorate, and stakeholders

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 134 - Outdoor Recreation
- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities
- 901 - Program and Project Design, and Statistics

4. Associated Institute Type(s)

- 1862 Research

Outcome # 3

1. Outcome Target

Directly apply information from publications

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 134 - Outdoor Recreation
- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities

4. Associated Institute Type(s)

- 1862 Research

Outcome # 4

1. Outcome Target

Increased knowledge of decision-making, life skills, and positive life choices among youth and adults

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 134 - Outdoor Recreation
- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities

4. Associated Institute Type(s)

- 1862 Research

Outcome # 5

1. Outcome Target

Reduce obesity and improved nutrition and health

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 134 - Outdoor Recreation
- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle

- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities

4. Associated Institute Type(s)

- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes

Description

Current State budget shortfalls will narrow the breadth of research programs in NAES. Fewer research projects will be supported, faculty FTE were lost, and recruiting graduate students will be difficult. In addition, due to the Governor's hiring freeze and State budget shortfalls the College/NAES is prevented from moving forward and determining the areas of research most important to the state, nation and internationally.

Current cutbacks to our programs will also affect how we determine the most important direction of the College/NAES to remain competitive with current research issues. Several of our senior faculty will be retiring and job security is scaring others away. The question is will cutbacks affect our ability to fill these positions or will we be forced to cutback our research efforts to concentrate on teaching our courses. The funding shortfall has also affected the collaborations between NAES and the University of Nevada Cooperative Extension through the loss of most joint appointments. UNCE is also facing dramatic cuts in personnel over the next two years, which will undoubtedly affect NAES's stakeholder input and dissemination of results.

All of these issues will determine the future of our research.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Annual evaluations are conducted on each funded project and continuation of a multi-year project is contingent on appropriate accomplishments the previous year. Stakeholder input is obtained through involvement by stakeholders on review panels. CABNR/NAES will use the "Outcomes" as our measure of success for projects that have concluded.

V(A). Planned Program (Summary)

Program # 9

1. Name of the Planned Program

Climate Change

2. Brief summary about Planned Program

The NAES research program brings together plant, soil & computer scientists, ecologists, limnologists, and economists to study basic and applied approaches for identifying large-scale factors influencing changes in temperatures; understanding feedback mechanisms between regional climate and vegetation change; understanding effects of climate change on disturbance regimes; assessing effects of locally generated greenhouse gases on regional climate; and understanding effects of change in precipitation type on hydrologic process.

NAES has complementary expertise in climate change. NAES scientists are currently focused on: effects of increased CO₂ on arid rangelands, precipitation zones in the Sierras, food web linkages in alpine lakes, mountainous ecosystems responses to climate change, invasive species and controlling wildfire cycles in the Great Basin.

3. Program existence : Intermediate (One to five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships			12%	
104	Protect Soil from Harmful Effects of Natural Elements			15%	
112	Watershed Protection and Management			15%	
201	Plant Genome, Genetics, and Genetic Mechanisms			15%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants			15%	
206	Basic Plant Biology			15%	
402	Engineering Systems and Equipment			13%	
	Total			100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Arid regions, including Nevada, comprise 40% of the world's land surface and are home to one-third of the world's population. These regions are especially vulnerable to climate change because of dependence on water resources.

Developing improved understanding of impacts of climate change on a local or regional scale is imperative for the Great Basin, which includes Nevada, and is considered one of the most endangered eco-regions in the United States. Climate change, urbanization, changing land use, limited water resources, altered fire regimes, invasive species, insects and plant disease all contribute to Nevada's tipping point. Close linkages that exist between stressors and their importance for land management and public policy highlight the need for scientific research.

Priorities include identification of large-scale forcing factors that underlie recent changes in temperatures; understanding feedback mechanisms between regional climate and vegetation change; understanding effects of climate change on disturbance regimes; assessing effects of locally generated greenhouse gases on regional climate; and understanding effects of change in precipitation type on hydrologic process.

2. Scope of the Program

- In-State Research
- Multistate Research
- Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

By 2100, the average temperatures for Nevada are expected to increase by 3-4° F in the spring and fall and by 5-6° F in the summer and winter (EPA report 1998). El Niño also is predicted to increase in frequency and duration as a result of global climate change. Increasing temperatures will affect the rate of water evaporation and precipitation in the state. Precipitation will become increasingly erratic in the coming century with decreases expected in the summer months of about 10 percent and potential increases of 15-40 percent in the fall, spring, and winter months (EPA Nevada Report, 1998).

In general, Nevada is expected to have wetter winters and more arid summers as the subtropical dry zones for the whole planet are projected to increase (USGCRP 2000). Higher temperatures and increased winter rainfall will be accompanied by a reduction in snow.

2. Ultimate goal(s) of this Program

It is NAES goal to build regional and sub-regional models that evaluate different scenarios and strategies caused by climate change. We want to create an infrastructure that determines and analyzes effects on ecosystems, disturbance regimes, changes in water balance and supply under climate change, while training students, enhancing policy making and keeping our communities/stakeholders informed.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2014	0.0	0.0	1.0	0.0
2015	0.0	0.0	1.0	0.0
2016	0.0	0.0	1.5	0.0
2017	0.0	0.0	1.5	0.0
2018	0.0	0.0	2.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Scientists are investigating: avian and forest vulnerability, the effects of elevated nitrogen on forest, the effects of nutrients and carbon fluctuations across aquatic and desert ecosystems, the effects on soils at the rain-snow transition zone, and creating educational programs that stimulates transformative research, education and outreach on effects of regional climate change on ecosystem resources.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> ● Education Class ● Workshop ● Demonstrations ● Other 1 (Town Hall Meetings) ● Other 2 (Field Lab Open Houses) 	<ul style="list-style-type: none"> ● Public Service Announcement ● Newsletters ● TV Media Programs ● Web sites other than eXtension

3. Description of targeted audience

Scientific community, resource managers, Nevada System of Higher Education faculty, students, constituents and policy makers.

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Peer reviewed journal articles, publications in commodity group publications, presentations at scientific meetings, presentations at stakeholder, Native American and agency meetings.
- Leveraged Research Projects
- Number of Graduate Students or Post-Doctorates Trained
- Number of Undergraduate Students Involved in Research
- Web Sites Created or Updated

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	New fundamental or Applied knowledge
2	Improved skills of students, post-doctorate, and stakeholders
3	New or improved methods
4	Adopt and use new methods or improved technology
5	Adopt new improved skills
6	Apply improved fundamental or applied knowledge
7	Improve rangeland ecosystems

Outcome # 1

1. Outcome Target

New fundamental or Applied knowledge

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 104 - Protect Soil from Harmful Effects of Natural Elements
- 112 - Watershed Protection and Management
- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 206 - Basic Plant Biology
- 402 - Engineering Systems and Equipment

4. Associated Institute Type(s)

- 1862 Research

Outcome # 2

1. Outcome Target

Improved skills of students, post-doctorate, and stakeholders

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 104 - Protect Soil from Harmful Effects of Natural Elements
- 112 - Watershed Protection and Management
- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 206 - Basic Plant Biology
- 402 - Engineering Systems and Equipment

4. Associated Institute Type(s)

- 1862 Research

Outcome # 3

1. Outcome Target

New or improved methods

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 104 - Protect Soil from Harmful Effects of Natural Elements
- 112 - Watershed Protection and Management
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 402 - Engineering Systems and Equipment

4. Associated Institute Type(s)

- 1862 Research

Outcome # 4

1. Outcome Target

Adopt and use new methods or improved technology

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 104 - Protect Soil from Harmful Effects of Natural Elements
- 112 - Watershed Protection and Management
- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 402 - Engineering Systems and Equipment

4. Associated Institute Type(s)

- 1862 Research

Outcome # 5

1. Outcome Target

Adopt new improved skills

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 104 - Protect Soil from Harmful Effects of Natural Elements
- 112 - Watershed Protection and Management
- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 206 - Basic Plant Biology
- 402 - Engineering Systems and Equipment

4. Associated Institute Type(s)

- 1862 Research

Outcome # 6

1. Outcome Target

Apply improved fundamental or applied knowledge

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 104 - Protect Soil from Harmful Effects of Natural Elements
- 112 - Watershed Protection and Management
- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 206 - Basic Plant Biology
- 402 - Engineering Systems and Equipment

4. Associated Institute Type(s)

- 1862 Research

Outcome # 7

1. Outcome Target

Improve rangeland ecosystems

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 104 - Protect Soil from Harmful Effects of Natural Elements
- 112 - Watershed Protection and Management
- 402 - Engineering Systems and Equipment

4. Associated Institute Type(s)

- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Economy
- Appropriations changes
- Other (University of Nevada budget cuts)

Description

Current State budget shortfalls will narrow the breadth of research programs in NAES. Fewer research projects will be supported, faculty FTE were lost, and recruiting graduate students will be difficult. In addition, due to the Governor's hiring freeze and State budget shortfalls the College/NAES is prevented from moving forward and determining the areas of research most important to the state, nation and internationally.

Current cutbacks to our programs will also affect how we determine the most important direction of the College/NAES to remain competitive with current research issues. Several of our senior faculty will be retiring and job security is scaring others away. The question is will cutbacks affect our ability to fill these positions or will we be forced to cutback our research efforts to concentrate on teaching our courses. The funding shortfall has also affected the collaborations between NAES and the University of Nevada Cooperative Extension through the loss of most joint appointments. UNCE is also facing dramatic cuts in personnel over the next two years, which will undoubtedly affect NAES's stakeholder input and dissemination of results.

All of these issues will determine the future of our research.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Annual evaluations are conducted on each funded project and continuation of a multi-year project is contingent on appropriate accomplishments the previous year. Stakeholder input is obtained through involvement by stakeholders on review panels. CABNR/NAES will use the "Outcomes" as our measure of success for projects that have concluded.

