

2011 University of Nevada Research Plan of Work

Status: Accepted

Date Accepted: 06/16/2010

I. Plan Overview

1. Brief Summary about Plan Of Work

The research programs of the NAES are integral to the College of Agriculture, Biotechnology and Natural Resources and are associated with the School of Medicine. Central to the mission is the protection, utilization and management of soil water, air, plant and animal resources, the economic vitality of the agriculture industry, and the quality of the environment. Of equal importance is the utilization of food in health promoting human diets and the social and economic well being of individuals and families. Research is conducted in the laboratories of the Max C. Fleischmann College of Agriculture, Knudsen Resource Center, Howard Medical Sciences, Bureau of Mines building, and the Sarah Fleischmann College of Human and Community Sciences. Six field laboratory sites are also utilized for research, including: Main Station Field Laboratory, which houses the large animal surgical facility and laboratory and the meats laboratory; Valley Road Field Laboratory, which houses the new state of the art NAES Greenhouse Complex and algae ponds; Newlands Research and Extension Center; Gund Ranch Rangeland Research Center; S Bar S Ranch, and the Jay Dow Sr. Wetlands Research Laboratory.

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

Year	Extension		Research	
	1862	1890	1862	1890
2011	0.0	0.0	26.5	0.0
2012	0.0	0.0	27.0	0.0
2013	0.0	0.0	28.0	0.0
2014	0.0	0.0	28.5	0.0
2015	0.0	0.0	29.0	0.0

II. Merit Review Process

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

- Expert Peer Review

2. Brief Explanation

Scientific peer review drives the initial selection of research projects that comprise the NAES research portfolio. NAES solicits 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 contributing departments are responsible for obtaining scientific peer review. We have initiated a web based peer review process for department peer review and Experiment Station administrative use for evaluating the proposed research for the Nevada Agricultural Experiment Station. The department will submit their ranked evaluation of the research proposals for that respective department, and the Director will approve the research projects based on the departmental recommendations, peer review 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

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. 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 CSREES 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 efficiency?

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 Lab Days at our Field Stations)

Brief explanation.

We have and will continue to conduct tours throughout the state for the purpose of obtaining stakeholder input. During these tours we invite participants to town hall meetings through general press coverage in the local newspapers, and we invite stakeholder groups and individuals through personal contact, i.e., email, telephone, etc., to attend. We hold an annual "Field Lab Day" at our Main Station Field Laboratory and the Gund Range Research Station where there is an excellent dialog between stakeholders and NAES faculty and administrators.

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 committee that meets and provides advice 1-3 times per year. In addition, we coordinate town hall meetings throughout the state with the purpose of obtaining direct input to the NAES research portfolio. The primary objective is to connect the CABNR/NAES teaching and research programs to the citizens of Nevada. Our partnership with Nevada Cooperative Extension provides assistance and access to stakeholders. Informal discussions with key stakeholders provides important input into our programs.

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 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	Natural Resource Management and Environmental Sciences in the Great Basin and Sierran Ecosystems
2	Economic Development with Emphasis in Rural Areas
3	Nutrition and Health
4	Global Food Security and Hunger
5	Climate Change
6	Sustainable Energy
7	Childhood Obesity
8	Food Safety

V(A). Planned Program (Summary)

Program # 1

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

To address these critical issues, 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 evaluating sage grouse and pygmy rabbit habitats and developing a conservation plan compatible with Nevada agriculture.

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
102	Soil, Plant, Water, Nutrient Relationships			2%	
112	Watershed Protection and Management			20%	
121	Management of Range Resources			10%	
122	Management and Control of Forest and Range Fires			5%	
123	Management and Sustainability of Forest Resources			2%	
133	Pollution Prevention and Mitigation			5%	
135	Aquatic and Terrestrial Wildlife			2%	
136	Conservation of Biological Diversity			15%	
206	Basic Plant Biology			8%	
211	Insects, Mites, and Other Arthropods Affecting Plants			2%	
213	Weeds Affecting Plants			5%	
302	Nutrient Utilization in Animals			5%	
304	Animal Genome			2%	
305	Animal Physiological Processes			5%	
311	Animal Diseases			10%	
601	Economics of Agricultural Production and Farm Management			2%	
	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 1.99 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 pinon 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
2011	0.0	0.0	7.5	0.0
2012	0.0	0.0	7.5	0.0
2013	0.0	0.0	8.0	0.0
2014	0.0	0.0	8.0	0.0
2015	0.0	0.0	8.5	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, 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 evaluating sage grouse and pygmy rabbit 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 ● 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

3. Description of targeted audience

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

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2011	2500	4000000	350	1000
2012	2750	4000000	350	1000
2013	2750	4000000	400	1000
2014	3000	4000000	450	1000
2015	3000	4000000	450	1000

2. (Standard Research Target) Number of Patent Applications Submitted

2011:0 2012:0 2013:0 2014:0 2015:0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2011	35	0	35
2012	35	0	35
2013	40	0	40

Year	Research Target	Extension Target	Total
2014	40	0	40
2015	45	0	45

V(H). State Defined Outputs**1. Output Target**

- Peer reviewed scientific publications, publications in natural resource and environmental organization publications, presentations at scientific meetings, presentations at stakeholder, Native American and agency meetings.

2011:60	2012:60	2013:65	2014:65	2015:70
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- Field Days Conducted

2011:1	2012:1	2013:1	2014:1	2015:1
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- Newsletters Produced

2011:2	2012:2	2013:3	2014:3	2015:3
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- Research Projects Conducted

2011:50	2012:50	2013:55	2014:55	2015:60
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- Web Sites Created or Updated

2011:20	2012:20	2013:25	2014:25	2015:30
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- Digital Media Created or Updated

2011:1	2012:1	2013:2	2014:2	2015:2
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- Manuals and Other Printed Instructional Materials Produced

2011:2	2012:2	2013:2	2014:3	2015:3
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- Number of Graduate Students or Post-Doctorates Trained

2011:80	2012:80	2013:85	2014:85	2015:90
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- Number of Undergraduate Students Involved in Research

2011:40	2012:40	2013:45	2014:45	2015:50
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V(I). State Defined Outcome

O. No.	Outcome Name
1	Peer reviewed journal articles, presentations at scientific meetings, articles in natural resource and environmental science magazines, presentations at stakeholder, Native American and agency meetings.

Outcome # 1**1. Outcome Target**

Peer reviewed journal articles, presentations at scientific meetings, articles in natural resource and environmental science magazines, presentations at stakeholder, Native American and agency meetings.

2. Outcome Type : Change in Action Outcome Measure

2011:30

2012:32

2013:34

2014:34

2015:35

3. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management
- 121 - Management of Range Resources
- 136 - Conservation of Biological Diversity
- 206 - Basic Plant Biology
- 311 - Animal Diseases

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
- Other (Budgetary Restraints)

Description

With federal grant funding on the decline, this has affected not only our research programs and ability to recruit new graduate students but also our ability to carry out our ongoing research. However, 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, nationally 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 potential layoffs are looming, cutbacks will affect our ability to fill these positions or we will be forced to cutback our research efforts to concentrate on teaching our courses. All of these issues will determine the future of our research.

V(K). Planned Program (Evaluation Studies and Data Collection)**1. Evaluation Studies Planned**

- Before-After (before and after program)
- During (during program)

Description

The research programs of NAES are evaluated through peer and stakeholder review, and only those projects that pass both reviews are funded. In addition, 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 involving stakeholders on review panels, presenting accomplishments at town hall meetings, field lab open houses, meetings with agency personnel and by personal contact with stakeholders.

2. Data Collection Methods

- Sampling
- Unstructured
- Observation
- Portfolio Reviews
- Journals

Description

The impact of various research projects of NAES are determined annually for submission into the NAES web page database. Collecting impacts are the responsibility of the project PI's and developed in coordination with the office of the Director of NAES. They estimate economic, environmental, social impacts and the impact of the research results on the scientific discipline is monitored by evaluating publication both peer reviewed and others, and a review of the publication portfolio generated for that specific project. Stakeholder input is obtained through town hall meetings, field lab open houses, stakeholder review panels, obtaining input from extension and individual contacts.

V(A). Planned Program (Summary)**Program # 2****1. Name of the Planned Program**

Economic Development with Emphasis in Rural Areas

2. Brief summary about Planned Program

Nevada scientists will continue to conduct economic analysis of various rural labor and public policy issues, research improving childcare and youth development in Nevada. Research will continue in economic development through the economic development center and analysis and development of rural healthcare.

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
123	Management and Sustainability of Forest Resources			4%	
307	Animal Management Systems			35%	
602	Business Management, Finance, and Taxation			10%	
605	Natural Resource and Environmental Economics			4%	
608	Community Resource Planning and Development			25%	
610	Domestic Policy Analysis			10%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities			5%	
805	Community Institutions, Health, and Social Services			7%	
	Total			100%	

V(C). Planned Program (Situation and Scope)**1. Situation and priorities**

In 2000, the population of Nevada was 1,998,257 persons, representing a 66 percent increase from 1990. From April 1, 2000 to July 1, 2009 Nevada's population grew another 32.3% compare to the national average of 9.1%. The states' growth is the result of international migration with nearly a third of new residents coming from California. The statewide population density is 18.2 persons per square mile (the national average is 79.6 persons per square mile). The majority of the population resides in Clark County (69%) and Washoe County (17%) 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 2000 U.S. Census Bureau, 11.1 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 2000 U.S. Census Bureau, 34.7% of Nevadans were less than 20 years of age and 11.1% 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 NCE 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 Regional Coordination and Implementation Committee (RCIC) 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 the goal 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
2011	0.0	0.0	2.0	0.0
2012	0.0	0.0	2.5	0.0
2013	0.0	0.0	2.5	0.0
2014	0.0	0.0	3.0	0.0
2015	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, research improving childcare and diverse needs of custodial grandparents in Nevada. Research will continue in economic development through the economic development center and analysis and development of rural healthcare.

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

3. Description of targeted audience

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

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2011	1500	15000	500	500
2012	1500	15000	500	500
2013	1500	15000	500	500
2014	1500	15000	500	500
2015	1500	15000	500	500

2. (Standard Research Target) Number of Patent Applications Submitted

2011:0 2012:0 2013:0 2014:0 2015:0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2011	20	0	20
2012	22	0	22
2013	22	0	22
2014	24	0	24
2015	24	0	24

V(H). State Defined Outputs

1. Output Target

- 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.

2011:28	2012:30	2013:30	2014:30	2015:32
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- Field Days Conducted

2011:1	2012:1	2013:1	2014:1	2015:1
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- Newsletters Produced

2011:2	2012:2	2013:3	2014:3	2015:3
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- Web Sites Created or Updated

2011:6	2012:6	2013:8	2014:8	2015:10
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- Number of Graduate Students or Post-Doctorates Trained

2011:10	2012:12	2013:12	2014:16	2015:16
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- Number of Undergraduate Students Involved in Research

2011:6	2012:6	2013:8	2014:8	2015:10
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- Research Projects Conducted

2011:12	2012:12	2013:15	2014:15	2015:18
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V(I). State Defined Outcome

O. No.	Outcome Name
1	Peer reviewed scientific journal articles, publications on economic development, presentations at scientific meetings, presentations at stakeholder, Native American, health care, agency and local government meetings,

Outcome # 1**1. Outcome Target**

Peer reviewed scientific journal articles, publications on economic development, presentations at scientific meetings, presentations at stakeholder, Native American, health care, agency and local government meetings,

2. Outcome Type : Change in Action Outcome Measure**2011:26****2012:28****2013:28****2014:30****2015:30****3. Associated Knowledge Area(s)**

- 307 - Animal Management Systems
- 602 - Business Management, Finance, and Taxation
- 608 - Community Resource Planning and Development
- 610 - Domestic Policy Analysis

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
- Other (Declining Budgets)

Description

Current State budget shortfalls will narrow the breadth of research programs in NAES. Fewer research projects will be supported 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 potential layoffs are looming, 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. All of these issues will determine the future of our research.

V(K). Planned Program (Evaluation Studies and Data Collection)**1. Evaluation Studies Planned**

- Before-After (before and after program)
- During (during program)

Description

The research programs of NAES are evaluated through peer and stakeholder review, and only those projects that pass both reviews are funded. In addition, 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, presenting accomplishments at town hall meetings, field lab open houses, meetings with agency personnel and by personal contact.

2. Data Collection Methods

- Sampling
- Unstructured
- Observation
- Portfolio Reviews
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Description

The impact of various research projects of NAES are determined annually for submission into the NAES web page database. Collecting impacts are the responsibility of the project PI's and developed in coordination with the office of the Director of NAES. They estimate economic, environmental, social impacts and the impact of the research results on the scientific discipline is monitored by evaluating publications both peer reviewed and others, and a review of the publications portfolio generated for that specific project. Stakeholder input is obtained through town hall meetings, field lab open house, stakeholder review panels, obtaining input from extension and individual contacts.

V(A). Planned Program (Summary)**Program # 3****1. Name of the Planned Program**

Nutrition and Health

2. Brief summary about Planned 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 stem cell transplantation to treat human disease, nutritional intervention in the treatment of cancer, nutritional protection from side stream cigarette smoke, evaluating the beneficial effect of functional foods, studying school education programs on children's nutrition, and studying youth development.

3. Program existence : Mature (More then 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 : No

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			20%	
134	Outdoor Recreation			4%	
703	Nutrition Education and Behavior			20%	
724	Healthy Lifestyle			8%	
802	Human Development and Family Well-Being			40%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities			3%	
901	Program and Project Design, and Statistics			5%	
	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 gm. 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 NCE, 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 Regional Coordination and Implementation Committee (RCIC) 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 postnatal needs of mothers and their infants through behavior-focused education.

Elementary and middle school-aged children
 Adolescents
 Adults at worksite settings
 Seniors

- 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 postnatal needs of mothers and their infants through behavior-focused education.

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
2011	0.0	0.0	3.0	0.0
2012	0.0	0.0	3.0	0.0
2013	0.0	0.0	3.5	0.0
2014	0.0	0.0	3.5	0.0
2015	0.0	0.0	4.0	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, nutritional protection from side stream cigarette smoke, 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

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)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2011	1500	50000	350	2000
2012	1500	50000	350	2000
2013	1750	55000	450	2500
2014	1750	55000	450	2500
2015	2000	60000	500	3500

2. (Standard Research Target) Number of Patent Applications Submitted

2011:1 2012:0 2013:0 2014:0 2015:0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2011	29	0	29
2012	30	0	30
2013	30	0	30
2014	30	0	30
2015	32	0	32

V(H). State Defined Outputs

1. Output Target

- 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.

2011:35 2012:40 2013:45 2014:45 2015:50

- Newsletters Produced

2011:2 2012:2 2013:2 2014:3 2015:3

- Research Projects Conducted

2011:15 2012:20 2013:20 2014:25 2015:25

- Web Sites Created or Updated

2011:3 2012:3 2013:5 2014:5 2015:6

- Number of Graduate Students or Post-Doctorates Trained

2011:20 2012:20 2013:22 2014:22 2015:25

- Number of Undergraduate Students Involved in Research

2011:36 2012:36 2013:40 2014:40 2015:45

V(I). State Defined Outcome

O. No.	Outcome Name
1	Peer reviewed scientific publications, publications in health and nutrition organization publications, presentations at scientific meetings, presentations at stakeholder meetings, nutrition and health, school board, local governmental and Federal and State agency meetings.

Outcome # 1**1. Outcome Target**

Peer reviewed scientific publications, publications in health and nutrition organization publications, presentations at scientific meetings, presentations at stakeholder meetings, nutrition and health, school board, local governmental and Federal and State agency meetings.

2. Outcome Type : Change in Action Outcome Measure**2011:29****2012:30****2013:32****2014:32****2015:32****3. Associated Knowledge Area(s)**

- 133 - Pollution Prevention and Mitigation
- 703 - Nutrition Education and Behavior
- 802 - Human Development and Family Well-Being

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

Current State budget shortfalls will narrow the breadth of research programs in NAES. Fewer research projects will be supported 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 potential layoffs are looming, 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. All of these issues will determine the future of our research.

V(K). Planned Program (Evaluation Studies and Data Collection)**1. Evaluation Studies Planned**

- Before-After (before and after program)
- During (during program)

Description

The research programs of NAES are evaluated through peer and stakeholder review, and only those projects

that pass both reviews are funded. In addition, 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, presenting accomplishments at town hall meetings, field lab open houses, meetings with agency personnel and by personal contact.

2. Data Collection Methods

- Sampling
- Unstructured
- Observation
- Portfolio Reviews
- Journals

Description

The impact of various research projects of NAES are determined annually for submission into the NAES web page database. Collecting impacts are the responsibility of the project PI's and developed in coordination with the office of the Director of NAES. They estimate economic, environmental, social impacts and the impact of the research results on the scientific discipline is monitored by evaluating publications both peer reviewed and others, and a review of the publications portfolio generated for that specific project. Stakeholder input is obtained through town hall meetings, field lab open house, stakeholder review panels, obtaining input from extension and individual contacts.

V(A). Planned Program (Summary)**Program # 4****1. Name of the Planned Program**

Global Food Security and Hunger

2. Brief summary about Planned Program

Our Plan of Work (POW) goals are to increase the overall quality and health of Nevada livestock through research and outreach, to understand the biology of plants through basic research, develop potential alternative crops, and to evaluate and promote improved marketing of Nevada products.

NAES research programs are continuing to focus on developing alternative crops that require less water including evaluating the potential to establish wine grape and native seed industries in Nevada. In addition, research continues on abiotic stress in plants and the genetic basis for resistance to stress. NAES scientists are using genomic analysis to select for production traits in livestock that will be optimized for the Nevada Arid Rangelands and improving the health of livestock for increased production. Research on our field laboratories is directed to improved livestock/range management, the use of livestock to control noxious weeds and decrease threats of fire, improved forage production and the development of livestock models for human diseases.

3. Program existence : New (One year or less)

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
201	Plant Genome, Genetics, and Genetic Mechanisms			7%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants			25%	
204	Plant Product Quality and Utility (Preharvest)			6%	
206	Basic Plant Biology			10%	
301	Reproductive Performance of Animals			17%	
305	Animal Physiological Processes			5%	
307	Animal Management Systems			10%	
311	Animal Diseases			5%	
511	New and Improved Non-Food Products and Processes			7%	
601	Economics of Agricultural Production and Farm Management			8%	
	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 stream. 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 produce 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 Regional Coordination and Implementation Committee (RCIC) will conduct the initial review and make recommendations to WED and WAAESD.

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. Additionally, marketing will continue to be a major focus of research and education. All educational programming and research is multi-faceted and will be detailed in annual reports.

Much of the work to achieve the goal identified above is in the base research program of the NAES.

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
2011	0.0	0.0	7.5	0.0
2012	0.0	0.0	7.5	0.0
2013	0.0	0.0	8.0	0.0
2014	0.0	0.0	8.0	0.0
2015	0.0	0.0	8.5	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Conduct research to enhance agricultural production in Nevada, publish the research findings in peer reviewed journals, educated our stakeholders through outreach by conducting rural tours and participating in town hall meetings, holding field lab open houses to demonstrate our research findings, submit news releases on new findings, publish an online semi-annual research and education successes as news from the College of Agriculture, Biotechnology and Natural Resources (CABNR) and the Nevada Agricultural Experiment Station (NAES), mail a quarterly postcard entitled "Research with Impact" featuring a specific research accomplishment of the Nevada Agricultural Experiment Station (this outreach piece received an award from the Association for Communications Excellence), include publications on the CABNR/NAES web page, report impacts through the CABNR/NAES web page, 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 ● 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

3. Description of targeted audience

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

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2011	7500	15000	1000	1000
2012	7500	15000	1000	1000
2013	7500	15000	1000	1000
2014	7500	15000	1000	1000
2015	7500	15000	1000	1000

2. (Standard Research Target) Number of Patent Applications Submitted

2011:0 2012:0 2013:0 2014:0 2015:0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2011	50	0	50
2012	50	0	50
2013	50	0	50
2014	55	0	55
2015	55	0	55

V(H). State Defined Outputs**1. Output Target**

- Peer reviewed journal articles, publications in commodity group publications, presentations at scientific meetings, presentations at stakeholder, Native American and agency meetings

2011:60	2012:60	2013:65	2014:65	2015:70
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- Demonstrations and Field Days Conducted

2011:10	2012:10	2013:15	2014:15	2015:20
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- Newsletters Produced

2011:2	2012:2	2013:3	2014:3	2015:4
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- Research Projects Conducted

2011:35	2012:35	2013:40	2014:40	2015:45
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- Web Sites Created or Updated

2011:8	2012:8	2013:10	2014:10	2015:12
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- Digital Media Created or Updated

2011:4	2012:4	2013:6	2014:6	2015:8
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- Manuals and Other Printed Instructional Materials Produced

2011:1	2012:1	2013:1	2014:1	2015:1
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- Number of Graduate Students or Post-Doctorates Trained

2011:35	2012:35	2013:40	2014:40	2015:45
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- Number of Undergraduate Students Involved in Research

2011:65	2012:65	2013:70	2014:70	2015:75
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V(I). State Defined Outcome

O. No.	Outcome Name
1	Peer reviewed journal articles, presentations at scientific meetings, presentations at stakeholder, Native American and agency meetings.

Outcome # 1**1. Outcome Target**

Peer reviewed journal articles, presentations at scientific meetings, presentations at stakeholder, Native American and agency meetings.

2. Outcome Type : Change in Knowledge Outcome Measure

2011:20

2012:22

2013:22

2014:24

2015:26

3. Associated Knowledge Area(s)

- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 206 - Basic Plant Biology
- 301 - Reproductive Performance of Animals
- 307 - Animal Management Systems
- 601 - Economics of Agricultural Production and Farm Management

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

Current State budget shortfalls will narrow the breadth of research programs in NAES. Fewer research projects will be supported 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 potential layoffs are looming, cutbacks will affect our ability to fill these positions or we will be forced to cutback our research efforts to concentrate on teaching our courses. All of these issues will determine the future of our research.

V(K). Planned Program (Evaluation Studies and Data Collection)**1. Evaluation Studies Planned**

- Before-After (before and after program)
- During (during program)

Description

The research programs of NAES are evaluated through peer and stakeholder review, and only those projects that pass both reviews are funded. In addition, 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, presenting accomplishments at town hall meetings, field lab open houses, meetings with agency personnel and by personal contact.

2. Data Collection Methods

- Sampling
- Unstructured
- Observation
- Portfolio Reviews
- Journals

Description

The impact of various research projects of NAES are determined annually for submission into the NAES web page database. Collecting impacts are the responsibility of the project PI's and developed in coordination with the office of the Director of NAES. They estimate economic, environmental, social impacts and the impact of the research results on the scientific discipline is monitored by evaluating publications both peer reviewed and others, and a review of the publications portfolio generated for that specific project. Stakeholder input is obtained through town hall meetings, field lab open house, stakeholder review panels, obtaining input from extension and individual contacts.

V(A). Planned Program (Summary)**Program # 5****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, effects of nitrogen deposits on forest, 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 : New (One year or less)

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
102	Soil, Plant, Water, Nutrient Relationships			12%	
104	Protect Soil from Harmful Effects of Natural Elements			10%	
112	Watershed Protection and Management			25%	
206	Basic Plant Biology			35%	
302	Nutrient Utilization in Animals			18%	
	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
2011	0.0	0.0	4.0	0.0
2012	0.0	0.0	4.0	0.0
2013	0.0	0.0	4.5	0.0
2014	0.0	0.0	4.5	0.0
2015	0.0	0.0	5.0	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

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)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2011	250	450	100	300
2012	250	450	100	300
2013	250	450	100	300
2014	250	450	100	300
2015	250	450	100	300

2. (Standard Research Target) Number of Patent Applications Submitted

2011:0 2012:0 2013:0 2014:0 2015:0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2011	40	0	40
2012	40	0	40
2013	45	0	45
2014	45	0	45
2015	50	0	50

V(H). State Defined Outputs

1. Output Target

- Peer reviewed journal articles, publications in commodity group publications, presentations at scientific meetings, presentations at stakeholder, Native American and agency meetings.

2011:150	2012:155	2013:160	2014:160	2015:165
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- Research Projects Conducted

2011:50	2012:52	2013:52	2014:54	2015:54
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- Number of Graduate Students or Post-Doctorates Trained

2011:65	2012:65	2013:70	2014:70	2015:75
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- Number of Undergraduate Students Involved in Research

2011:60	2012:60	2013:65	2014:65	2015:70
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V(I). State Defined Outcome

O. No.	Outcome Name
1	Peer reviewed journal articles, publications in commodity group publications, presentations at scientific meetings, presentations at stakeholder, Native American and agency meetings.

Outcome # 1**1. Outcome Target**

Peer reviewed journal articles, publications in commodity group publications, presentations at scientific meetings, presentations at stakeholder, Native American and agency meetings.

2. Outcome Type : Change in Knowledge Outcome Measure

2011:50

2012:50

2013:55

2014:55

2015:60

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
- 206 - Basic Plant Biology
- 302 - Nutrient Utilization in Animals

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
- Public Policy changes
- Government Regulations
- Populations changes (immigration, new cultural groupings, etc.)

Description

Current State budget shortfalls will narrow the breadth of research programs in NAES. Fewer research projects will be supported 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 potential layoffs are looming, 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. All of these issues will determine the future of our research.

V(K). Planned Program (Evaluation Studies and Data Collection)**1. Evaluation Studies Planned**

- Before-After (before and after program)
- During (during program)

Description

The research programs of NAES are evaluated through peer and stakeholder review, and only those projects that pass both reviews are funded. In addition, 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, presenting accomplishments at town hall meetings, field lab open houses, meetings with agency personnel and by personal contact.

2. Data Collection Methods

- Sampling
- Unstructured
- Observation
- Portfolio Reviews
- Journals

Description

The impact of various research projects of NAES are determined annually for submission into the NAES web page database. Collecting impacts are the responsibility of the project PI's and developed in coordination with the office of the Director of NAES. They estimate economic, environmental, social impacts and the impact of the research results on the scientific discipline is monitored by evaluating publications both peer reviewed and others, and a review of the publications portfolio generated for that specific project. Stakeholder input is obtained through town hall meetings, field lab open house, stakeholder review panels, obtaining input from extension and individual contacts.

V(A). Planned Program (Summary)**Program # 6****1. Name of the Planned Program**

Sustainable Energy

2. Brief summary about Planned Program

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 : New (One year or less)

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
204	Plant Product Quality and Utility (Preharvest)			10%	
206	Basic Plant Biology			65%	
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 Whitehouse 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
2011	0.0	0.0	1.5	0.0
2012	0.0	0.0	1.5	0.0
2013	0.0	0.0	2.0	0.0
2014	0.0	0.0	2.0	0.0
2015	0.0	0.0	2.5	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 bio9fuel 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

3. Description of targeted audience

Those most effected by this research include the general public, energy and chemical industry, and potential

producers.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2011	50	100	50	100
2012	50	100	50	100
2013	50	100	50	100
2014	50	100	50	100
2015	50	100	50	100

2. (Standard Research Target) Number of Patent Applications Submitted

2011:0 2012:0 2013:0 2014:0 2015:0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2011	10	0	10
2012	10	0	10
2013	12	0	12
2014	12	0	12
2015	14	0	14

V(H). State Defined Outputs

1. Output Target

- Peer reviewed journal articles, publications in commodity group publications, presentations at scientific meetings, presentations at stakeholder, Native American and agency meetings.

2011:35	2012:35	2013:40	2014:40	2015:45
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- Demonstrations and Field Days Conducted

2011:4	2012:4	2013:6	2014:6	2015:8
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- Number of Graduate Students or Post-Doctorates Trained

2011:3	2012:3	2013:5	2014:5	2015:6
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- Number of Undergraduate Students Involved in Research

2011:4	2012:4	2013:6	2014:6	2015:8
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- Research Projects Conducted

2011:2	2012:4	2013:6	2014:6	2015:8
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V(I). State Defined Outcome

O. No.	Outcome Name
1	Peer reviewed journal articles, publications in commodity group publications, presentations at scientific meetings, presentations at stakeholder, Native American and agency meetings.

Outcome # 1**1. Outcome Target**

Peer reviewed journal articles, publications in commodity group publications, presentations at scientific meetings, presentations at stakeholder, Native American and agency meetings.

2. Outcome Type : Change in Action Outcome Measure

2011:25

2012:25

2013:30

2014:30

2015:35

3. Associated Knowledge Area(s)

- 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

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
- Populations changes (immigration, new cultural groupings, etc.)

Description

Current State budget shortfalls will narrow the breadth of research programs in NAES. Fewer research projects will be supported 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 potential layoffs are looming, 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. All of these issues will determine the future of our research.

V(K). Planned Program (Evaluation Studies and Data Collection)**1. Evaluation Studies Planned**

- Before-After (before and after program)
- During (during program)

Description

The research programs of NAES are evaluated through peer and stakeholder review, and only those projects that pass both reviews are funded. In addition, 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, presenting accomplishments at town hall meetings, field lab open houses, meetings with agency personnel and by personal contact.

2. Data Collection Methods

- Sampling
- Unstructured
- Portfolio Reviews
- Journals

Description

The impact of various research projects of NAES are determined annually for submission into the NAES web page database. Collecting impacts are the responsibility of the project PI's and developed in coordination with the office of the Director of NAES. They estimate economic, environmental, social impacts and the impact of the research results on the scientific discipline is monitored by evaluating publications both peer reviewed and others, and a review of the publications portfolio generated for that specific project. Stakeholder input is obtained through town hall meetings, field lab open house, stakeholder review panels, obtaining input from extension and individual contacts.

V(A). Planned Program (Summary)**Program # 7****1. Name of the Planned Program**

Childhood Obesity

2. Brief summary about Planned Program

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 : New (One year or less)

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
703	Nutrition Education and Behavior			70%	
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 2007-2008 indicated that 9.5% 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
2011	0.0	0.0	2.0	0.0
2012	0.0	0.0	2.0	0.0
2013	0.0	0.0	2.5	0.0
2014	0.0	0.0	2.5	0.0
2015	0.0	0.0	3.0	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

3. Description of targeted audience

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

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2011	200	500	100	300
2012	200	500	100	300
2013	200	500	100	300
2014	200	500	100	300
2015	200	500	100	300

2. (Standard Research Target) Number of Patent Applications Submitted

2011:0 2012:0 2013:0 2014:0 2015:0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2011	12	0	12
2012	12	0	12
2013	14	0	14
2014	14	0	14
2015	16	0	16

V(H). State Defined Outputs**1. Output Target**

- Peer reviewed journal articles, publications in commodity group publications, presentations at scientific meetings, presentations at stakeholder, Native American and agency meetings.

2011:28	2012:28	2013:30	2014:30	2015:32
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- Newsletters Procuded

2011:2	2012:2	2013:3	2014:3	2015:4
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- Research Projects Conducted

2011:10	2012:10	2013:12	2014:12	2015:12
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- Web Sites Created or Updated

2011:3	2012:3	2013:3	2014:4	2015:4
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- Number of Graduate Students or Post-Doctorates Trained

2011:8	2012:8	2013:10	2014:10	2015:12
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- Number of Undergraduate Students Involved in Research

2011:30	2012:30	2013:35	2014:35	2015:35
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V(I). State Defined Outcome

O. No.	Outcome Name
1	Peer reviewed scientific publications, publications in health and nutrition organization publications, presentations at scientific meetings, presentations at stakeholder, nutrition and health, school board, local governmental and Federal and State agency meetings.

Outcome # 1**1. Outcome Target**

Peer reviewed scientific publications, publications in health and nutrition organization publications, presentations at scientific meetings, presentations at stakeholder, nutrition and health, school board, local governmental and Federal and State agency meetings.

2. Outcome Type : Change in Action Outcome Measure**2011:26****2012:26****2013:28****2014:28****2015:30****3. Associated Knowledge Area(s)**

- 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

V(J). Planned Program (External Factors)**1. External Factors which may affect Outcomes**

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Public Policy changes
- Government Regulations
- Populations changes (immigration, new cultural groupings, etc.)

Description

Current State budget shortfalls will narrow the breadth of research programs in NAES. Fewer research projects will be supported 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 potential layoffs are looming, 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. All of these issues will determine the future of our research.

V(K). Planned Program (Evaluation Studies and Data Collection)**1. Evaluation Studies Planned**

- Before-After (before and after program)
- During (during program)

Description

The research programs of NAES are evaluated through peer and stakeholder review, and only those projects that pass both reviews are funded. In addition, 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, presenting accomplishments at town hall meetings, field lab open houses, meetings with agency personnel and by personal contact.

2. Data Collection Methods

- Sampling
- Structured
- Observation
- Portfolio Reviews
- Journals

Description

The impact of various research projects of NAES are determined annually for submission into the NAES web page database. Collecting impacts are the responsibility of the project PI's and developed in coordination with the office of the Director of NAES. They estimate economic, environmental, social impacts and the impact of the research results on the scientific discipline is monitored by evaluating publications both peer reviewed and others, and a review of the publications portfolio generated for that specific project. Stakeholder input is obtained through town hall meetings, field lab open house, stakeholder review panels, obtaining input from extension and individual contacts.

V(A). Planned Program (Summary)**Program # 8****1. Name of the Planned Program**

Food Safety

2. Brief summary about Planned Program

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), a beef quality assurance with emphasis on Spanish peaking producers, bioterrorism/natural disaster emergency management program, an international animal health programs, reducing care facilities foodborne illnesses, and regulations and liability educational programs designed for the small producers of Nevada.

3. Program existence : New (One year or less)

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			93%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins			2%	
	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.

As with many former Soviet Union Republics, Georgia is working to define the structure and function of its health systems in a market economy. When Georgia was governed by the Soviets, animal health and welfare were part of a state-supported Soviet system. As a result, animal health and welfare programs are in need of professional development to

strengthen their international marketplace by effectively monitor and control emerging animal diseases.

Because of Nevada's growing elderly and young populations and the economic dependency on food service related tourism, we are particularly vulnerable for foodborne illness. And according to previous research a large educational gap also exists between care givers and their understanding in foodborne 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
2011	0.0	0.0	0.5	0.0
2012	0.0	0.0	0.5	0.0
2013	0.0	0.0	1.0	0.0
2014	0.0	0.0	1.0	0.0
2015	0.0	0.0	1.5	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

3. Description of targeted audience

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

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2011	9000	2500	1750	1000
2012	9000	2500	1750	1000
2013	9000	2500	1750	1000
2014	9000	2500	1750	1000
2015	9000	2500	1750	1000

2. (Standard Research Target) Number of Patent Applications Submitted

2011:0 2012:0 2013:0 2014:0 2015:0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2011	4	0	4
2012	4	0	4
2013	6	0	6

Year	Research Target	Extension Target	Total
2014	6	0	6
2015	8	0	8

V(H). State Defined Outputs

1. Output Target

- Peer reviewed journal articles, publications in commodity group publications, presentations at scientific meetings, presentations at stakeholder, Native American and agency meetings.

2011:45 2012:45 2013:50 2014:50 2015:55

- Research Projects

2011:6 2012:6 2013:8 2014:8 2015:10

- Number of Graduate Students or Post-Doctorates Trained

2011:4 2012:4 2013:6 2014:6 2015:8

- Number of Undergraduate Students Involved in Research

2011:10 2012:10 2013:12 2014:12 2015:14

V(I). State Defined Outcome

O. No.	Outcome Name
1	Peer reviewed journal articles, publications in commodity group publications, presentations at scientific meetings, presentations at stakeholder, Native American and agency meetings.

Outcome # 1**1. Outcome Target**

Peer reviewed journal articles, publications in commodity group publications, presentations at scientific meetings, presentations at stakeholder, Native American and agency meetings.

2. Outcome Type : Change in Action Outcome Measure

2011:30

2012:30

2013:35

2014:35

2015:40

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

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
- Public Policy changes
- Government Regulations
- Populations changes (immigration, new cultural groupings, etc.)

Description

Current State budget shortfalls will narrow the breadth of research programs in NAES. Fewer research projects will be supported 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 potential layoffs are looming, 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. All of these issues will determine the future of our research.

V(K). Planned Program (Evaluation Studies and Data Collection)**1. Evaluation Studies Planned**

- Before-After (before and after program)
- During (during program)

Description

The research programs of NAES are evaluated through peer and stakeholder review, and only those projects that pass both reviews are funded. In addition, 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, presenting accomplishments at town hall meetings, field lab open houses, meetings with agency personnel and by personal contact.

2. Data Collection Methods

- Sampling
- Unstructured
- Observation
- Portfolio Reviews
- Journals

Description

The impact of various research projects of NAES are determined annually for submission into the NAES web page database. Collecting impacts are the responsibility of the project PI's and developed in coordination with the office of the Director of NAES. They estimate economic, environmental, social impacts and the impact of the research results on the scientific discipline is monitored by evaluating publications both peer reviewed and others, and a review of the publications portfolio generated for that specific project. Stakeholder input is obtained through town hall meetings, field lab open house, stakeholder review panels, obtaining input from extension and individual contacts.