

ENERGY TECHNOLOGIES STANDARDS



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To improve student achievement and educator effectiveness by ensuring opportunities, facilitating learning, and promoting excellence



TABLE OF CONTENTS

Nevada State Board of Education / Nevada Department of Education	iii
Acknowledgements / Standards Development Members / Business and Industry Validation / Project Coordinator	vii
Introduction	ix
Content Standard 1.0 Integrate Career and Technical Student Organizations (CTSOs)	1
Content Standard 2.0 Identify Lab Organization and Safety Procedures	2
Content Standard 3.0 Apply the Engineering Design Process.....	3
Content Standard 4.0 Apply Basic Electricity Concepts	4
Content Standard 5.0 Investigate Sources of Energy.....	5
Content Standard 6.0 Apply Fundamental Energy Principles	7
Content Standard 7.0 Investigate Energy Efficiency and Conservation.....	8
Crosswalks and Alignments	9

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The development of Nevada career and technical standards and assessments is a collaborative effort sponsored by the Office of Career Readiness, Adult Learning, and Education Options at the Department of Education. The Department of Education relies on teachers and industry representatives who have the technical expertise and teaching experience to develop standards and performance indicators that truly measure student skill attainment. Most important, however, is recognition of the time, expertise and great diligence provided by the writing team members in developing the career and technical standards for Energy Technologies.

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BUSINESS AND INDUSTRY VALIDATION

All CTE standards developed through the Nevada Department of Education are validated by business and industry through one or more of the following processes: (1) the standards are developed by a team consisting of business and industry representatives; or (2) a separate review panel was coordinated with industry experts to ensure the standards include the proper content; or (3) the adoption of nationally recognized standards endorsed by business and industry.

The Energy Technologies standards were validated through active participation of business and industry representatives on the development team.

PROJECT COORDINATOR

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INTRODUCTION

The standards in this document are designed to clearly state what the student should know and be able to do upon completion of an advanced high school Energy Technologies program. These standards are designed for a two-credit course sequence that prepares the student for a technical assessment directly aligned to the standards.

These exit-level standards are designed for the student to complete all standards through their completion of a program of study. These standards are intended to guide curriculum objectives for a program of study.

The standards are organized as follows:

- **Content Standards** are general statements that identify major areas of knowledge, understanding, and the skills students are expected to learn in key subject and career areas by the end of the program.
- **Performance Standards** follow each content standard. Performance standards identify the more specific components of each content standard and define the expected abilities of students within each content standard.
- **Performance Indicators** are very specific criteria statements for determining whether a student meets the performance standard. Performance indicators may also be used as learning outcomes, which teachers can identify as they plan their program learning objectives.

The crosswalk and alignment section of the document shows where the performance indicators support the Nevada Academic Content Standards. Where correlation with an academic content standard exists, students in the Energy Technologies program perform learning activities that support, either directly or indirectly, achievement of the academic content standards that are listed.

All students are encouraged to participate in the career and technical student organization (CTSO) that relates to the Energy Technologies program. CTSOs are co-curricular national organizations that directly reinforce learning in the CTE classroom through curriculum resources, competitive events, and leadership development. CTSOs provide students the ability to apply academic and technical knowledge, develop communication and teamwork skills, and cultivate leadership skills to ensure college and career readiness.

The Employability Skills for Career Readiness identify the “soft skills” needed to be successful in all careers and must be taught as an integrated component of all CTE course sequences. These standards are available in a separate document.

The **Standards Reference Code** is only used to identify or align performance indicators listed in the standards to daily lesson plans, curriculum documents, or national standards. The Standards Reference Code is an abbreviated name for the program, and the content standard, performance standard and performance indicator are referenced in the program standards. This abbreviated code for identifying standards uses each of these items. For example, ENRGY is the Standards Reference Code for Energy Technologies. For Content Standard 2, Performance Standard 3 and Performance Indicator 4 the Standards Reference Code would be ENRGY.2.3.4.

CONTENT STANDARD 1.0: INTEGRATE CAREER AND TECHNICAL STUDENT ORGANIZATIONS (CTSOs)***PERFORMANCE STANDARD 1.1: EXPLORE THE HISTORY AND ORGANIZATION OF CTSOs**

- 1.1.1 Discuss the requirements of CTSO participation/involvement as described in Carl D. Perkins Law
- 1.1.2 Research nationally recognized CTSOs
- 1.1.3 Investigate the impact of federal and state government regarding the progression and operation of CTSOs (e.g., Federal Statutes and Regulations, Nevada Administrative Code [NAC], Nevada Revised Statutes [NRS])

PERFORMANCE STANDARD 1.2: DEVELOP LEADERSHIP SKILLS

- 1.2.1 Discuss the purpose of parliamentary procedure
- 1.2.2 Demonstrate the proper use of parliamentary procedure
- 1.2.3 Differentiate between an office and a committee
- 1.2.4 Discuss the importance of participation in local, regional, state, and national conferences, events, and competitions
- 1.2.5 Participate in local, regional, state, or national conferences, events, or competitions
- 1.2.6 Describe the importance of a constitution and bylaws to the operation of a CTSO chapter

PERFORMANCE STANDARD 1.3: PARTICIPATE IN COMMUNITY SERVICE

- 1.3.1 Explore opportunities in community service-related work-based learning (WBL)
- 1.3.2 Participate in a service learning (program related) and/or community service project or activity
- 1.3.3 Engage with business and industry partners for community service

PERFORMANCE STANDARD 1.4: DEVELOP PROFESSIONAL AND CAREER SKILLS

- 1.4.1 Demonstrate college and career readiness (e.g., applications, resumes, interview skills, presentation skills)
- 1.4.2 Describe the appropriate professional/workplace attire and its importance
- 1.4.3 Investigate industry-standard credentials/certifications available within this Career Cluster™
- 1.4.4 Participate in authentic contextualized instructional activities
- 1.4.5 Demonstrate technical skills in various student organization activities/events

PERFORMANCE STANDARD 1.5: UNDERSTAND THE RELEVANCE OF CAREER AND TECHNICAL EDUCATION (CTE)

- 1.5.1 Make a connection between program standards to career pathway(s)
- 1.5.2 Explain the importance of participation and completion of a program of study
- 1.5.3 Promote community awareness of local student organizations associated with CTE programs

*Refer to the program of study Curriculum Framework for appropriate CTSO(s).

CONTENT STANDARD 2.0: IDENTIFY LAB ORGANIZATION AND SAFETY PROCEDURES**PERFORMANCE STANDARD 2.1: DEMONSTRATE GENERAL LAB SAFETY RULES AND PROCEDURES**

- 2.1.1 Describe general shop safety rules and procedures
- 2.1.2 Demonstrate knowledge of Occupational Safety and Health Administration (OSHA)/Environmental Protection Agency (EPA) and their role in workplace safety
- 2.1.3 Identify safety requirements of different working conditions (e.g., scenarios such as height, confined spaces, chemicals present)
- 2.1.4 Comply with the required use of safety glasses, ear protection, gloves, and shoes during lab/shop activities (i.e., personal protection equipment – PPE)
- 2.1.5 Utilize safe procedures for handling of tools and equipment
- 2.1.6 Operate lab equipment according to safety guidelines
- 2.1.7 Identify and use proper lifting procedures and proper use of support equipment
- 2.1.8 Utilize proper ventilation procedures for working within the lab/shop area
- 2.1.9 Identify marked safety areas
- 2.1.10 Identify the location and the types of fire extinguishers and other fire safety equipment; demonstrate knowledge of the procedures for using fire extinguishers and other fire safety equipment for different situations
- 2.1.11 Identify the location and use of eye wash stations
- 2.1.12 Identify the location of the posted evacuation routes
- 2.1.13 Identify and wear appropriate clothing for lab/shop activities
- 2.1.14 Secure hair and jewelry for lab/shop activities
- 2.1.15 Demonstrate knowledge of the safety aspects of low and high voltage circuits
- 2.1.16 Locate and interpret safety data sheets (SDS)
- 2.1.17 Prepare time or job cards, reports, or records
- 2.1.18 Perform housekeeping duties
- 2.1.19 Follow verbal instructions to complete work assignments
- 2.1.20 Follow written instructions to complete work assignments

PERFORMANCE STANDARD 2.2: IDENTIFY AND UTILIZE HAND TOOLS

- 2.2.1 Identify hand tools and their appropriate usage
- 2.2.2 Identify standard and metric designation
- 2.2.3 Demonstrate the proper techniques when using hand tools
- 2.2.4 Demonstrate safe handling and use of appropriate tools
- 2.2.5 Demonstrate proper cleaning, storage, and maintenance of tools

PERFORMANCE STANDARD 2.3: IDENTIFY AND UTILIZE POWER TOOLS AND EQUIPMENT

- 2.3.1 Identify power tools and their appropriate usage
- 2.3.2 Identify equipment and their appropriate usage
- 2.3.3 Demonstrate the proper techniques when using power tools and equipment
- 2.3.4 Demonstrate safe handling and use of appropriate power tools and equipment
- 2.3.5 Demonstrate proper cleaning, storage, and maintenance of power tools and equipment

CONTENT STANDARD 3.0: APPLY THE ENGINEERING DESIGN PROCESS**PERFORMANCE STANDARD 3.1: EXPLORE THE DESIGN PROCESS OF ENERGY AND POWER APPLICATIONS**

- 3.1.1 Identify the design process
- 3.1.2 Identify the activities that occur during each phase of the design process
- 3.1.3 Apply the steps of the design process to solve a variety of design problems
- 3.1.4 Describe how social, environmental, and financial constraints influence the design process

CONTENT STANDARD 4.0: APPLY BASIC ELECTRICITY CONCEPTS**PERFORMANCE STANDARD 4.1: INVESTIGATE BASIC ELECTRICITY FUNDAMENTALS**

- 4.1.1 Define electricity
- 4.1.2 Describe the basic electrical principles
- 4.1.3 Explain the laws of attraction and repulsion and the principle of charge
- 4.1.4 Discuss the concepts of current flow, electrical pressure, resistance, and energy
- 4.1.5 Describe the relationship of conductor size and length to current flow and resistance
- 4.1.6 Identify various electrical units such as voltage, current, resistance, and power
- 4.1.7 Summarize electrical static discharge and how it is generated
- 4.1.8 Compare and contrast Alternating and Direct Current (AC/DC)
- 4.1.9 Identify industry standard symbols
- 4.1.10 Create schematic diagrams using proper symbols
- 4.1.11 Annotate schematics legibly

PERFORMANCE STANDARD 4.2: APPLY ELECTRICAL PRINCIPLES

- 4.2.1 Demonstrate safe use of electricity and lab equipment
- 4.2.2 Demonstrate basic electrical theory (e.g., modify circuits)
- 4.2.3 Identify electrical components and their applications (e.g., switches, fuses, relays, resistors, capacitors, inductors, transformers, etc.)
- 4.2.4 Utilize tools and test equipment appropriately that are utilized in the electrical industry (e.g., multimeters, wire strippers, power supplies)
- 4.2.5 Measure electrical characteristics of voltage, current, and resistance in basic electrical circuits using multimeters
- 4.2.6 Calculate Ohm's Law and power equations
- 4.2.7 Construct, measure, and analyze simple series, parallel, and series-parallel (combination) circuits utilizing a schematic, Ohm's Law, and power equations
- 4.2.8 Discuss appropriate use of various electrical connections (e.g., crimp connectors, wire nuts, soldering, lugs)
- 4.2.9 Design, assemble, and troubleshoot electrical systems using identified components

CONTENT STANDARD 5.0: INVESTIGATE SOURCES OF ENERGY**PERFORMANCE STANDARD 5.1: IDENTIFY SOURCES OF ENERGY**

- 5.1.1 Define energy and name its sources
- 5.1.2 Explain how electricity is transmitted, distributed, and stored
- 5.1.3 Explain the environmental impacts of producing and distributing electricity and methods used to minimize negative effects
- 5.1.4 Investigate career opportunities and training requirements in the energy industry
- 5.1.5 Investigate new and emerging technologies that might affect the future of the energy industry
- 5.1.6 Design a model and conduct an investigation to provide evidence that an electric current can produce a magnetic field and that a changing magnetic field can produce an electric current

PERFORMANCE STANDARD 5.2: DESCRIBE FOSSIL FUELS

- 5.2.1 Describe the formation of fossil fuels (i.e., petroleum, coal, natural gas)
- 5.2.2 Compare and contrast extraction methods
- 5.2.3 Describe availability, allocation, and conservation efforts
- 5.2.4 Discuss the advantages and disadvantages of using fossil fuels
- 5.2.5 Describe the past, present, and future of fossil fuels
- 5.2.6 Evaluate competing design solutions for developing, managing, and utilizing fossil fuels

PERFORMANCE STANDARD 5.3: DESCRIBE SOLAR ENERGY

- 5.3.1 Define solar power
- 5.3.2 Describe and explain how solar power is generated and harnessed
- 5.3.3 Discuss the advantages and disadvantages of solar energy
- 5.3.4 Describe the past, present, and future of solar energy
- 5.3.5 Evaluate competing design solutions for developing, managing, and utilizing solar energy

PERFORMANCE STANDARD 5.4: DESCRIBE WIND ENERGY

- 5.4.1 Define wind power
- 5.4.2 Explain how wind power is generated and harnessed
- 5.4.3 Discuss the advantages and disadvantages of wind energy
- 5.4.4 Describe the past, present, and future of wind energy
- 5.4.5 Evaluate competing design solutions for developing, managing, and utilizing wind energy

PERFORMANCE STANDARD 5.5: DESCRIBE HYDROPOWER ENERGY

- 5.5.1 Define hydropower
- 5.5.2 Describe and explain how hydropower is generated and harnessed
- 5.5.3 Discuss the advantages and disadvantages of hydropower energy (site a plan
- 5.5.4 Describe the past, present, and future of hydropower energy
- 5.5.5 Evaluate competing design solutions for developing, managing, and utilizing hydropower energy

PERFORMANCE STANDARD 5.6: DESCRIBE GEOTHERMAL ENERGY

- 5.6.1 Define geothermal power
- 5.6.2 Describe and explain how geothermal power is generated and harnessed
- 5.6.3 Discuss the advantages and disadvantages of geothermal energy
- 5.6.4 Describe the past, present, and future of geothermal energy
- 5.6.5 Evaluate competing design solutions for developing, managing, and utilizing geothermal energy

PERFORMANCE STANDARD 5.7: DESCRIBE BIOMASS ENERGY

- 5.7.1 Define biomass power
- 5.7.2 Describe and explain how biomass power is generated and harnessed
- 5.7.3 Discuss the advantages and disadvantages of biomass energy
- 5.7.4 Describe the past, present, and future of biomass for energy
- 5.7.5 Evaluate competing design solutions for developing, managing, and utilizing biomass energy

PERFORMANCE STANDARD 5.8: DESCRIBE NUCLEAR ENERGY

- 5.8.1 Define nuclear power
- 5.8.2 Describe and explain how nuclear power is generated and harnessed
- 5.8.3 Discuss the advantages and disadvantages of nuclear energy
- 5.8.4 Describe the past, present, and future of nuclear energy
- 5.8.5 Evaluate competing design solutions for developing, managing, and utilizing nuclear energy

PERFORMANCE STANDARD 5.9: APPLY KNOWLEDGE TO MODEL THE USES OF SOURCES OF ENERGY

- 5.9.1 Formulate a plan for implementation for use in at one of the listed sources of energy (e.g., wind, solar)
- 5.9.2 Design and construct a basic power system
- 5.9.3 Test, analyze, and troubleshoot a constructed basic power system (e.g., consumption levels, efficiency, functionality)

CONTENT STANDARD 6.0: APPLY FUNDAMENTAL ENERGY PRINCIPLES**PERFORMANCE STANDARD 6.1: IDENTIFY ENERGY FORMS**

- 6.1.1 Identify energy forms (i.e., thermal, radiant, nuclear, chemical, electrical, mechanical)
- 6.1.2 Identify units, both standard and metric, used to measure energy and power (e.g., therms, kilowatts, gigajoules)
- 6.1.3 Calculate unit conversions between common energy measurements (standard and metric)

PERFORMANCE STANDARD 6.2: DISTINGUISH POTENTIAL AND KINETIC ENERGY

- 6.2.1 Define potential and kinetic energy
- 6.2.2 Identify forms of potential and kinetic energy
- 6.2.3 Research energy conversions (i.e., potential to kinetic)
- 6.2.4 Calculate potential and kinetic energy, including unit conversions
- 6.2.5 Design, build, and refine a mechanical device that works within given constraints to model the change from potential to kinetic energy

PERFORMANCE STANDARD 6.3: IDENTIFY TRANSFER OF ENERGY (THERMODYNAMICS)

- 6.3.1 Define thermodynamics as it relates to transfer and/or conservation of energy
- 6.3.2 Investigate the Laws of Thermodynamics
- 6.3.3 Demonstrate the concepts of heat transfer (i.e., conduction, convection, radiation)

PERFORMANCE STANDARD 6.4: USE THE DESIGN PROCESS TO EXPLORE FUNDAMENTAL ENERGY PRINCIPLES

- 6.4.1 Design, build, and refine a mechanical device that works within given constraints to convert one forms of energy into another form of energy

CONTENT STANDARD 7.0: INVESTIGATE ENERGY EFFICIENCY AND CONSERVATION**PERFORMANCE STANDARD 7.1: IDENTIFY EFFICIENCY PRINCIPLES**

- 7.1.1 Define efficiency, conservation, weatherization, and primary building systems (e.g., building shells, window ratings, insulation ratings)
- 7.1.2 Describe common terms, units, and usage in residential and commercial buildings as reflected on energy bills
- 7.1.3 Describe how energy is used within various sectors of society (e.g., electric vehicles, storage, back-up power supplies)
- 7.1.4 Discuss future trends in energy technology
- 7.1.5 Explore careers related to building and energy/appliance codes and reasons for implementation of the codes
- 7.1.6 Explain the societal, environmental, and economic advantages of energy conservation

CROSSWALKS AND ALIGNMENTS

CROSSWALKS (ACADEMIC STANDARDS)

The crosswalk of the Energy Technologies Standards shows links to the Nevada Academic Content Standards. The crosswalk identifies the performance indicators in which the learning objectives in the Energy Technologies program support academic learning. The performance indicators are grouped according to their content standard and are crosswalked to the Nevada Academic Content Standards in English Language Arts, Mathematics, and Science.

ALIGNMENTS (MATHEMATICAL PRACTICES)

In addition to correlation with the Nevada Academic Content Standards for Mathematics, many performance indicators support the Mathematical Practices. The following table illustrates the alignment of the Energy Technologies Standards Performance Indicators and the Mathematical Practices. This alignment identifies the performance indicators in which the learning objectives in the Energy Technologies program support academic learning.

ALIGNMENTS (SCIENCE AND ENGINEERING PRACTICES)

In addition to correlation with the Nevada Academic Content Standards for Science, many performance indicators support the Science and Engineering Practices. The following table illustrates the alignment of the Energy Technologies Standards Performance Indicators and the Science and Engineering Practices. This alignment identifies the performance indicators in which the learning objectives in the Energy Technologies program support academic learning.

CROSSWALKS (COMMON CAREER TECHNICAL CORE)

The crosswalk of the Energy Technologies Standards shows links to the Common Career Technical Core. The crosswalk identifies the performance indicators in which the learning objectives in the Energy Technologies program support the Common Career Technical Core. The Common Career Technical Core defines what students should know and be able to do after completing instruction in a program of study. The Energy Technologies Standards are crosswalked to the Science, Technology, Engineering, and Mathematics Career Cluster™ and the Engineering and Technology Career Pathway.

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**CROSSWALK OF ENERGY TECHNOLOGIES STANDARDS
AND THE NEVADA ACADEMIC CONTENT STANDARDS**

CONTENT STANDARD 1.0: INTEGRATE CAREER AND TECHNICAL STUDENT ORGANIZATIONS (CTSOs)

Performance Indicators	Nevada Academic Content Standards
1.1.1	<p>English Language Arts: Speaking and Listening Standards</p> <p>SL.11-12.1a Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.</p> <p>SL.11-12.2 Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.</p> <p>SL.11-12.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.</p>
1.1.2	<p>English Language Arts: Speaking and Listening Standards</p> <p>SL.11-12.1a Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.</p> <p>SL.11-12.2 Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.</p> <p>SL.11-12.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects</p> <p>WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.</p>
1.1.3	<p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects</p> <p>WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.</p>

Performance Indicators	Nevada Academic Content Standards
1.2.1	<p>English Language Arts: Speaking and Listening Standards</p> <p>SL.11-12.1a Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.</p> <p>SL.11-12.2 Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.</p> <p>SL.11-12.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.</p>
1.2.4	<p>English Language Arts: Speaking and Listening Standards</p> <p>SL.11-12.1a Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.</p> <p>SL.11-12.2 Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.</p> <p>SL.11-12.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.</p>
1.2.5	<p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects</p> <p>WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p>
1.4.1	<p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects</p> <p>WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p>

Performance Indicators	Nevada Academic Content Standards
1.4.2	<p>English Language Arts: Speaking and Listening Standards</p> <p>SL.11-12.1a Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.</p> <p>SL.11-12.2 Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.</p> <p>SL.11-12.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects</p> <p>WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.</p>
1.4.3	<p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects</p> <p>WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.</p>
1.4.4	<p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects</p> <p>WHST.11-12.5 Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.</p>
1.4.5	<p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects</p> <p>WHST.11-12.6 Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.</p>

Performance Indicators	Nevada Academic Content Standards
1.5.2	<p>English Language Arts: Language Standards L.11-12.6 Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.</p> <p>English Language Arts: Speaking and Listening Standards SL.11-12.1a Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.</p> <p>SL.11-12.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.</p>

CONTENT STANDARD 2.0: IDENTIFY LAB ORGANIZATION AND SAFETY PROCEDURES

Performance Indicators	Nevada Academic Content Standards
2.1.1	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p>
2.1.2	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>English Language Arts: Speaking and Listening Standards SL.11-12.1a Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p>
2.1.10	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p>
2.1.16	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.2 Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.</p> <p>RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics.</p> <p>RST.11-12.5 Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects WHST.11-12.9 Draw evidence from informational texts to support analysis, reflection, and research.</p>
2.2.17	<p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p>

Performance Indicators	Nevada Academic Content Standards
2.1.19	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>English Language Arts: Speaking and Listening Standards SL.11-12.1d Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.</p>
2.1.20	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p>

CONTENT STANDARD 4.0: APPLY BASIC ELECTRICITY CONCEPTS

Performance Indicators	Nevada Academic Content Standards
4.1.2	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.</p>
4.1.3	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.</p> <p>Science: HS-Motion and Stability: Forces and Interactions HS-PS2-6 Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials.</p>
4.1.4	<p>English Language Arts: Speaking and Listening Standards SL.11-12.1a Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.</p> <p>Science: HS-Motion and Stability: Forces and Interactions HS-PS2-6 Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials.</p>
4.1.5	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.</p>

Performance Indicators	Nevada Academic Content Standards
4.1.6	<p>Math: Number & Quantity – Quantities NQ.A.1 Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.</p>
4.1.7	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.</p> <p>Science: HS-Motion and Stability: Forces and Interactions HS-PS2-6 Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials.</p>
4.1.8	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.</p>
4.1.10	<p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p>
4.2.6	<p>Math: Algebra – Creating Equations ACED.A.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.</p> <p>Math: Algebra – Reasoning with Equations and Inequalities AREI.B.3 Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.</p> <p>Math: Algebra – Seeing Structure in Expressions ASSE.A.1 Interpret expressions that represent a quantity in terms of its context.</p> <p>Math: Functions – Linear, Quadratic, and Exponential Models FLE.B.5 Interpret the parameters in a linear or exponential function in terms of a context.</p>

Performance Indicators	Nevada Academic Content Standards
4.2.7	<p>Math: Algebra – Creating Equations ACED.A.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.</p> <p>Math: Algebra – Reasoning with Equations and Inequalities AREI.B.3 Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.</p> <p>Math: Algebra – Seeing Structure in Expressions ASSE.A.1 Interpret expressions that represent a quantity in terms of its context.</p> <p>Math: Functions – Linear, Quadratic, and Exponential Models FLE.B.5 Interpret the parameters in a linear or exponential function in terms of a context.</p>
4.2.8	<p>English Language Arts: Speaking and Listening Standards SL.11-12.1a Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.</p>

CONTENT STANDARD 5.0: INVESTIGATE SOURCES OF ENERGY

Performance Indicators	Nevada Academic Content Standards
5.1.2	<p>English Language Arts: Speaking and Listening Standards SL.11-12.1a Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.</p>
5.1.3	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>English Language Arts: Speaking and Listening Standards SL.11-12.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.</p> <p>Science: HS-Earth's Systems HS-ESS3-1 Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.</p> <p>HS-ESS3-6 Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.</p>
5.1.5	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.</p>

Performance Indicators	Nevada Academic Content Standards
5.1.6	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects WHST.11-12.2a Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.</p>
5.2.1	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.</p>
5.2.2	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.</p>
5.2.3	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.</p>

Performance Indicators	Nevada Academic Content Standards
5.2.4	<p>English Language Arts: Speaking and Listening Standards SL.11-12.1a Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.</p> <p>Science: HS-Earth and Human Activity HS-ESS3-1 Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.</p>
5.2.5	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.</p>
5.2.6	<p>Science: HS-Earth and Human Activity HS-ESS3-2 Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.</p>
5.3.2	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.</p> <p>Science: HS-Waves and Their Applications in Technologies for Information Transfer HS-PS4-5 Communicate technical information about how some technological devices use the principles of wave behavior and wave interactions with matter to transmit and capture information and energy.</p>
5.3.3	<p>English Language Arts: Speaking and Listening Standards SL.11-12.1a Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.</p> <p>Science: HS-Earth and Human Activity HS-ESS3-1 Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.</p>

Performance Indicators	Nevada Academic Content Standards
5.3.4	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.</p>
5.3.5	<p>Science: HS-Earth and Human Activity HS-ESS3-2 Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.</p>
5.4.2	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.</p>
5.4.3	<p>English Language Arts: Speaking and Listening Standards SL.11-12.1a Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.</p> <p>Science: HS-Earth and Human Activity HS-ESS3-1 Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.</p>
5.4.4	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.</p>
5.4.5	<p>Science: HS-Earth and Human Activity HS-ESS3-2 Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.</p>

Performance Indicators	Nevada Academic Content Standards
5.5.2	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.</p>
5.5.3	<p>English Language Arts: Speaking and Listening Standards SL.11-12.1a Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.</p> <p>Science: HS-Earth and Human Activity HS-ESS3-1 Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.</p>
5.5.4	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.</p>
5.5.5	<p>Science: HS-Earth and Human Activity HS-ESS3-2 Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.</p>
5.6.2	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.</p>

Performance Indicators	Nevada Academic Content Standards
5.6.3	<p>English Language Arts: Speaking and Listening Standards SL.11-12.1a Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.</p> <p>Science: HS-Earth and Human Activity HS-ESS3-1 Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.</p>
5.6.4	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.</p>
5.6.5	<p>Science: HS-Earth and Human Activity HS-ESS3-2 Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.</p>
5.7.2	<p>English Language Arts: Speaking and Listening Standards SL.11-12.1a Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.</p> <p>Science: HS-Earth and Human Activity HS-ESS3-1 Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.</p>
5.7.4	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.</p>
5.7.5	<p>Science: HS-Earth and Human Activity HS-ESS3-2 Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.</p>

Performance Indicators	Nevada Academic Content Standards
5.8.2	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.</p>
5.8.3	<p>English Language Arts: Speaking and Listening Standards SL.11-12.1a Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.</p> <p>Science: HS-Earth and Human Activity HS-ESS3-1 Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.</p>
5.8.4	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.</p>
5.8.5	<p>Science: HS-Earth and Human Activity HS-ESS3-2 Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.</p>

CONTENT STANDARD 6.0: APPLY FUNDAMENTAL ENERGY PRINCIPLES

Performance Indicators	Nevada Academic Content Standards
6.1.2	<p>Math: Number & Quantity – Quantities NQ.A.1 Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.</p>
6.1.3	<p>Math: Number & Quantity – Quantities NQ.A.1 Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.</p>
6.2.3	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.</p> <p>Science: HS-Energy HS-PS3-1 Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.</p>
6.2.4	<p>Math: Algebra – Creating Equations ACED.A.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.</p> <p>Math: Algebra – Reasoning with Equations and Inequalities AREI.B.3 Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.</p> <p>Math: Algebra – Seeing Structure in Expressions ASSE.A.1 Interpret expressions that represent a quantity in terms of its context.</p> <p>Science: HS-Energy HS-PS3-1 Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.</p>

Performance Indicators	Nevada Academic Content Standards
6.3.2	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.</p>
6.3.3	<p>Science: HS-Energy HS-PS3-4 Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperature are combined within a closed system results in a more uniform energy distribution among the components in the system (second law of thermodynamics).</p>
6.4.1	<p>Science: HS-Earth and Human Activity HS-ESS3-4 Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.</p>

CONTENT STANDARD 7.0: INVESTIGATE ENERGY EFFICIENCY AND CONSERVATION

Performance Indicators	Nevada Academic Content Standards
7.1.2	<p>English Language Arts: Speaking and Listening Standards SL.11-12.1a Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.</p> <p>Math: Number & Quantity – Quantities NQ.A.1 Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.</p>
7.1.3	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.</p>
7.1.4	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.</p>
7.1.5	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>English Language Arts: Speaking and Listening Standards SL.11-12.1a Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.</p>

**ALIGNMENT OF ENERGY TECHNOLOGIES STANDARDS
AND THE MATHEMATICAL PRACTICES**

Mathematical Practices	Energy Technologies Performance Indicators
1. Make sense of problems and persevere in solving them.	4.2.7
2. Reason abstractly and quantitatively.	4.2.6, 4.2.7
3. Construct viable arguments and critique the reasoning of others.	
4. Model with mathematics.	4.1.6; 4.2.6 6.1.3; 6.2.4
5. Use appropriate tools strategically.	4.1.10; 4.2.5
6. Attend to precision.	6.1.3; 6.2.4 7.1.2
7. Look for and make use of structure.	
8. Look for and express regularity in repeated reasoning.	

**ALIGNMENT OF ENERGY TECHNOLOGIES STANDARDS
AND THE SCIENCE AND ENGINEERING PRACTICES**

Science and Engineering Practices	Energy Technologies Performance Indicators
1. Asking questions (for science) and defining problems (for engineering).	5.1.3; 5.2.4
2. Developing and using models.	5.1.3 6.4.1
3. Planning and carrying out investigations.	4.2.5 5.5.3; 5.6.3; 5.7.3; 5.8.3
4. Analyzing and interpreting data.	4.2.7
5. Using mathematics and computational thinking.	4.2.6, 4.2.7 6.2.5
6. Constructing explanations (for science) and designing solutions (for engineering).	3.1.3-3.1.4 4.1.7, 4.1.8 5.2.6; 5.3.5 6.2.5
7. Engaging in argument from evidence.	
8. Obtaining, evaluating, and communicating information.	4.1.3, 4.1.4 5.3.2, 5.3.3; 5.4.5; 5.6.5, 5.7.5, 5.8.5

**CROSSWALKS OF ENERGY TECHNOLOGIES STANDARDS
AND THE COMMON CAREER TECHNICAL CORE**

Science, Technology, Engineering, and Mathematics Career Cluster™	Performance Indicators
1. Apply engineering skills in a project that requires project management, process control and quality assurance.	5.1.6; 5.2.6; 5.3.5; 5.4.5 5.5.5; 5.6.5; 5.7.5; 5.8.5 5.9.1; 5.9.2; 6.2.5; 6.4.1
2. Use technology to acquire, manipulate, analyze, and report data.	4.2.5; 5.9.3
3. Describe and follow safety, health and environmental standards related to science, technology, engineering, and mathematics (STEM) workplaces.	2.1.2, 2.1.3, 2.1.16
4. Understand the nature and scope of the Science, Technology, Engineering, and Mathematics Career Cluster™ and the role of STEM in society and the economy.	5.1.5; 7.1.3-7.1.5
5. Demonstrate an understanding of the breadth of career opportunities and means to those opportunities in each of the Science, Technology, Engineering, and Mathematics Career Pathways.	5.1.4; 7.1.5
6. Demonstrate technical skills needed in a chosen STEM field.	4.1.8, 4.1.10; 4.2.4 4.2.5 4.2.9

Engineering and Technology Career Pathway	Performance Indicators
1. Use STEM concepts and processes to solve problems involving design and/or production.	4.1.9-4.1.11; 4.2.5-4.2.7
2. Display and communicate STEM information.	4.1.9-4.1.11; 4.2.5-4.2.7
3. Apply processes and concepts for the use of technological tools in STEM.	4.2.4-4.2.7
4. Apply the elements of the design process.	3.1.1-3.1.4; 5.9.1, 5.9.3 6.4.1
5. Apply the knowledge learned in STEM to solve problems.	6.1.2, 6.1.3; 6.2.3, 6.2.4
6. Apply the knowledge learned in the study of STEM to provide solutions to human and societal problems in an ethical and legal manner.	5.1.5; 5.2.3; 7.1.3, 7.1.4 7.1.6