

# Standards Correlations

## Energy Source Life Cycle (LC8411)

Task	SOL Correlation	ITEEA National Standards	TSA Competitive Events
<b>Demonstrating Personal Qualities and Abilities</b>			
Demonstrate creativity and innovation.	English: 6.1, 6.3, 6.4, 6.6, 6.7, 6.9, 7.1, 7.3, 7.4, 7.6, 7.7, 7.9, 8.1, 8.3, 8.4, 8.6, 8.7, 8.9, 9.1, 9.5, 9.6, 9.8, 10.1, 10.5, 10.6, 10.8, 11.1, 11.5, 11.6, 11.8, 12.1, 12.5, 12.6, 12.8 History and Social Science: CE.1, CE.4, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WG.4, WHI.1, WHII.1 Mathematics: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.10, 6.11, 6.12, 7.2, 7.3, 7.8, 7.9, 8.2, 8.4, 8.6, 8.7, 8.11, 8.12, 8.17, 8.18, A.9, AFDA.3, AFDA.4, AFDA.5, AFDA.6, AFDA.7, AFDA.8, AII.9, COM.1, COM.3, COM.4, COM.5, COM.8, DM.7, DM.1*, DM.10, DM.2*, DM.3*, PS.3*, PS.4*, PS.7*, PS.9*, PS.10*		

Task	SOL Correlation	ITEEA National Standards	TSA Competitive Events
	Science: 6.1, BIO.1, CH.1, ES.1, LS.1, PS.1		
Demonstrate critical thinking and problem solving.	English: 6.1, 6.3, 6.4, 6.5, 6.6, 6.7, 6.9, 7.1, 7.3, 7.4, 7.5, 7.6, 7.7, 7.9, 8.1, 8.3, 8.4, 8.5, 8.6, 8.7, 8.9, 9.1, 9.5, 9.6, 9.8, 10.1, 10.5, 10.6, 10.8, 11.1, 11.5, 11.6, 11.8, 12.1, 12.5, 12.6, 12.8 History and Social Science: CE.1, CE.4, CE.11, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WG.4, WHI.1, WHII.1 Mathematics: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.10, 6.11, 7.2, 7.3, 7.8, 7.12, 7.13, 8.2, 8.4, 8.8, 8.9, 8.10, 8.11, A.8, A.9, G.1, G.13, G.14, AFDA.3, AFDA.5, AFDA.8, AII.9, AII.10, AII.11, COM.1, COM.3, COM.4, COM.5, COM.8, DM.4, DM.7, DM.1*, DM.2*, DM.3*, DM.9*, PS.9*, PS.10* Science: 6.1, BIO.1, CH.1, ES.1, LS.1, PS.1		
Demonstrate initiative and self-direction.	English: 6.1, 6.4, 6.6, 6.7, 6.9, 7.1, 7.4, 7.6, 7.7, 7.9, 8.1, 8.4, 8.6, 8.7, 8.9, 9.1, 9.5, 9.6, 9.8, 10.1, 10.5, 10.6, 10.8, 11.1,		

<b>Task</b>	<b>SOL Correlation</b>	<b>ITEEA National Standards</b>	<b>TSA Competitive Events</b>
	11.5, 11.6, 11.8, 12.1, 12.5, 12.6, 12.8 History and Social Science: CE.1, CE.4, CE.11, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1		
Demonstrate integrity.	English: 6.1, 7.1, 8.1, 9.1, 9.5, 10.1, 10.5, 11.1, 11.5, 12.1, 12.5 History and Social Science: CE.1, CE.3, CE.4, GOVT.1, GOVT.16, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1		
Demonstrate work ethic.	English: 6.1, 7.1, 8.1, 9.1, 10.1, 11.1, 12.1 History and Social Science: CE.1, CE.4, CE.14, GOVT.1, GOVT.16, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1 Science: CH.1		
<b>Demonstrating Interpersonal Skills</b>			
Demonstrate conflict-resolution skills.	English: 6.1, 6.2, 6.4, 6.6, 6.7, 6.9, 7.1, 7.2, 7.4, 7.6, 7.7, 7.9, 8.1, 8.2, 8.4, 8.6, 8.7, 8.9, 9.1, 10.1, 11.1, 12.1		

<b>Task</b>	<b>SOL Correlation</b>	<b>ITEEA National Standards</b>	<b>TSA Competitive Events</b>
	History and Social Science: CE.1, CE.4, GOVT.1, USI.1, VUS.1		
Demonstrate listening and speaking skills.	English: 6.1, 6.2, 6.4, 6.6, 7.1, 7.2, 7.4, 7.6, 8.1, 8.2, 8.4, 8.6, 9.1, 10.1, 11.1, 12.1 History and Social Science: CE.1, CE.4, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1		
Demonstrate respect for diversity.	English: 6.1, 7.1, 8.1, 9.1, 10.1, 11.1, 12.1 History and Social Science: CE.1, CE.3, CE.4, GOVT.1, GOVT.16, USI.1, USII.1, USII.9, VUS.1, VUS.13, WG.1, WHI.1, WHII.1		
Demonstrate customer service skills.	English: 6.1, 6.4, 6.7, 7.1, 7.4, 7.7, 8.1, 8.4, 8.7, 9.1, 9.5, 9.6, 10.1, 10.5, 10.6, 11.1, 11.5, 11.6, 12.1, 12.5, 12.6 History and Social Science: CE.1, CE.4, GOVT.1, GOVT.16, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1		
Collaborate with team members	English: 6.1, 7.1, 8.1, 9.1, 10.1, 11.1, 12.1		

<b>Task</b>	<b>SOL Correlation</b>	<b>ITEEA National Standards</b>	<b>TSA Competitive Events</b>
	History and Social Science: CE.1, CE.3, CE.4, GOVT.1, GOVT.16, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1		
<b>Demonstrating Professional Competencies</b>			
Demonstrate big-picture thinking.	English: 6.1, 6.4, 7.1, 7.4, 8.1, 8.4, 9.1, 9.5, 10.1, 10.5, 11.1, 11.5, 12.1, 12.5 History and Social Science: CE.1, CE.4, CE.12, GOVT.1, GOVT.15, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1		
Demonstrate career- and life-management skills.	English: 6.1, 6.7, 7.1, 7.7, 8.1, 8.7, 9.1, 9.6, 10.1, 10.6, 11.1, 11.6, 12.1, 12.6 History and Social Science: CE.1, CE.4, CE.12, CE.14, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1 Mathematics: 8.4		
Demonstrate continuous learning and adaptability.	English: 6.1, 6.4, 6.7, 6.9, 7.1, 7.4, 7.7, 7.9, 8.1, 8.4, 8.7, 8.9, 9.1, 9.5, 9.6, 9.8, 10.1, 10.5, 10.6, 10.8, 11.1, 11.5, 11.6, 11.8, 12.1, 12.5, 12.6, 12.8		

Task	SOL Correlation	ITEEA National Standards	TSA Competitive Events
	History and Social Science: CE.1, CE.3, CE.4, CE.14, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1 Science: BIO.1, CH.1, LS.1, PH.1, PH.4, PS.1		
Manage time and resources.	English: 6.1, 6.2, 6.4, 6.7, 6.9, 7.1, 7.2, 7.4, 7.7, 7.9, 8.1, 8.2, 8.4, 8.7, 8.9, 9.1, 9.5, 9.6, 9.8, 10.1, 10.5, 10.6, 10.8, 11.2, 11.5, 11.6, 11.8, 12.2, 12.5, 12.6, 12.8 History and Social Science: CE.1, CE.4, CE.11, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1 Mathematics: 6.10, 6.11, 6.12, 7.2, 7.3, 7.8, 7.9, 7.10, 7.11, 7.12, 7.13, 8.4, 8.11, 8.12, 8.13, 8.14, 8.17, 8.18, A.4, A.5, A.8, A.9, AFDA.3, AFDA.4, AFDA.5, AFDA.6, AFDA.7, AFDA.8, COM.1, COM.3, COM.5, COM.8		
Demonstrate information-literacy skills.	English: 6.1, 6.2, 6.4, 6.6, 6.7, 6.9, 7.1, 7.2, 7.3, 7.4, 7.6, 7.7, 7.9, 8.1, 8.2, 8.3, 8.4, 8.6, 8.7, 8.9, 9.2, 9.5, 9.6, 9.8, 10.2, 10.5, 10.6, 10.8, 11.2, 11.5,		

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	11.6, 11.8, 12.2, 12.5, 12.6, 12.8 History and Social Science: CE.1, CE.4, CE.14, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1 Mathematics: 6.10, 6.11, 7.8, 7.9, 8.11, 8.12, A.8, A.9, AFDA.3, AFDA.4, AFDA.6, AFDA.7, AFDA.8, DM.8, PS.1*, PS.2*, PS.3*, PS.4*, PS.7*, PS.8*, PS.9*, PS.10* Science: 6.1, BIO.1, CH.1, ES.1, LS.1, PH.1, PS.1		
Demonstrate an understanding of information security.	English: 6.1, 6.2, 6.3, 6.4, 6.6, 6.7, 6.8, 6.9, 7.1, 7.2, 7.3, 7.4, 7.6, 7.7, 7.8, 7.9, 8.1, 8.2, 8.3, 8.4, 8.6, 8.7, 8.8, 8.9, 9.1, 9.2, 9.5, 9.6, 9.8, 10.1, 10.2, 10.5, 10.6, 10.8, 11.1, 11.2, 11.5, 11.6, 11.8, 12.1, 12.2, 12.5, 12.6, 12.8 History and Social Science: CE.1, CE.4, CE.14, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1 Mathematics: COM.10		
Maintain working knowledge of current information-technology (IT) systems.	English: 6.1, 6.3, 6.4, 6.6, 6.9, 7.1, 7.3, 7.4, 7.6, 7.9, 8.1, 8.3, 8.4, 8.6, 8.9		

Task	SOL Correlation	ITEEA National Standards	TSA Competitive Events
	History and Social Science: CE.1, CE.4, CE.14, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1 Mathematics: 7.8, COM.1, COM.2, COM.7, COM.9, COM.10, COM.11, COM.16, COM.18, PS.17 Science: BIO.1, CH.1, ES.1, PH.1		
Demonstrate proficiency with technologies, tools, and machines common to a specific occupation.	History and Social Science: CE.1, CE.4, CE.14, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1 Mathematics: 6.10, 6.11, 7.9, 8.4, A.7, A.8, A.9, AFDA.1, AFDA.3, AFDA.5, AII.4, AII.7, AII.9, COM.1, COM.7, COM.10, COM.11, COM.12, COM.16 Science: CH.1, ES.1, LS.1, PH.1, PS.1		
Apply mathematical skills to job-specific tasks.	English: 6.4, 6.6, 6.7, 7.4, 7.6, 7.7, 8.4, 8.6, 8.7, 9.5, 9.6, 10.5, 10.6, 11.5, 11.6, 12.5, 12.6 History and Social Science: CE.1, CE.4, CE.14, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1		

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	Mathematics: 6.1, 6.2, 6.5, 6.6, 6.12, 6.13, 6.14, 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.8, 7.9, 7.11, 7.12, 7.13, 8.4, 8.5, 8.6, 8.8, 8.9, 8.10, 8.11, 8.12, 8.13, 8.14, 8.15, 8.16, 8.17, 8.18, A.1, A.3, A.4, A.5, A.7, A.8, A.9, AFDA.1, AFDA.3, AFDA.5, AFDA.8, AII.3, AII.7, AII.9, AII.10, COM.1, COM.7 Science: 6.1, BIO.1, CH.1, ES.1, LS.1, PH.1, PS.1		
Demonstrate professionalism.	English: 6.1, 7.1, 8.1, 9.1, 10.1, 11.1, 12.1 History and Social Science: CE.1, CE.4, CE.14, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1		
Demonstrate reading and writing skills.	English: 6.1, 6.6, 6.7, 7.1, 7.6, 7.7, 8.1, 8.6, 8.7, 9.1, 9.5, 9.6, 9.7, 10.1, 10.5, 10.6, 10.7, 11.1, 11.5, 11.6, 11.7, 12.1, 12.5, 12.6, 12.7 History and Social Science: CE.1, CE.4, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1 Science: 6.1, PH.1, PS.1		

<b>Task</b>	<b>SOL Correlation</b>	<b>ITEEA National Standards</b>	<b>TSA Competitive Events</b>
Demonstrate workplace safety.	English: 6.4, 7.4, 8.4, 9.5, 10.5, 11.5, 12.5 History and Social Science: CE.1, CE.4, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1 Science: CH.1		
<b>Examining All Aspects of an Industry</b>			
Examine aspects of planning within an industry/organization.	History and Social Science: GOVT.16		
Examine aspects of management within an industry/organization.			
Examine aspects of financial responsibility within an industry/organization.			
Examine technical and production skills required of workers within an industry/organization.			
Examine principles of technology that underlie an industry/organization.			
Examine labor issues related to an industry/organization.	History and Social Science: GOVT.16		

<b>Task</b>	<b>SOL Correlation</b>	<b>ITEEA National Standards</b>	<b>TSA Competitive Events</b>
Examine community issues related to an industry/organization.	History and Social Science: GOVT.16		
Examine health, safety, and environmental issues related to an industry/organization.	History and Social Science: GOVT.16		
<b>Addressing Elements of Student Life</b>			
Identify the purposes and goals of the student organization.			
Explain the benefits and responsibilities of membership in the student organization as a student and in professional/civic organizations as an adult.			
Demonstrate leadership skills through participation in student organization activities, such as meetings, programs, and projects.			
Identify Internet safety issues and procedures for complying with acceptable use standards.			
<b>Exploring Work-Based Learning</b>			

<b>Task</b>	<b>SOL Correlation</b>	<b>ITEEA National Standards</b>	<b>TSA Competitive Events</b>
Identify the types of work-based learning (WBL) opportunities.			
Reflect on lessons learned during the WBL experience.			
Explore career opportunities related to the WBL experience.			
Participate in a WBL experience, when appropriate.			
<b>Distinguishing Among Sources of Energy</b>			
Define <i>energy</i> .	English: 10.3, 11.3  History and Social Science: VUS.8, WHII.4, WHII.8  Science: PH.5, PH.6, PH.7, PH.11	16. Energy and Power Technologies  2. The Core Concepts of Technology	Technology Bowl
Identify units of measure for power.	English: 10.5, 11.5	16. Energy and Power Technologies  2. The Core Concepts of Technology	Technology Bowl
Define <i>life cycle</i> as it relates to energy sources.	English: 10.3, 11.3	16. Energy and Power Technologies	Technology Bowl

<b>Task</b>	<b>SOL Correlation</b>	<b>ITEEA National Standards</b>	<b>TSA Competitive Events</b>
Describe the primary forms of energy and their uses.	English: 10.5, 11.5  History and Social Science: VUS.8, WHII.4, WHII.8  Science: PH.7	16. Energy and Power Technologies	Essays on Technology Technology Bowl
Identify sources of energy.	English: 10.5, 11.5  History and Social Science: GOVT.12, VUS.14, WG.17, WHII.14  Science: ES.6	16. Energy and Power Technologies	Technology Bowl
Evaluate energy sources that are nonrenewable, renewable, and inexhaustible.	English: 10.3, 10.5, 11.3, 11.5  Science: ES.6	13. Assess the Impact of Products and Systems	Essays on Technology
Compare the footprints of various energy sources.	English: 10.5, 11.5  History and Social Science: GOVT.12, VUS.14, WG.17, WHII.14	16. Energy and Power Technologies	Essays on Technology Technology Bowl
Investigate career options within the energy sector.	English: 10.5, 11.5  History and Social Science: GOVT.12, VUS.14, WG.17, WHII.14	16. Energy and Power Technologies	Essays on Technology
<b>Understanding Extraction Techniques</b>			
Describe the difference between extraction and the harnessing of energy sources.	English: 10.3, 10.5, 11.3, 11.5	16. Energy and Power Technologies	Technology Problem Solving

<b>Task</b>	<b>SOL Correlation</b>	<b>ITEEA National Standards</b>	<b>TSA Competitive Events</b>
	History and Social Science: GOVT.12, VUS.14, WG.17, WHIL.14		
Identify energy sources that are mined and the techniques used for extraction.	English: 10.5, 11.5  History and Social Science: GOVT.12, VUS.14, WG.17, WHIL.14	16. Energy and Power Technologies	Technology Bowl
Identify energy sources extracted using drilling and the techniques used for extraction.	English: 10.5, 11.5  History and Social Science: GOVT.12, VUS.14, WG.17, WHIL.14	16. Energy and Power Technologies	Technology Bowl
Identify energy sources that are harnessed.	English: 10.5, 11.5  History and Social Science: GOVT.12, VUS.14, WG.17, WHIL.14	16. Energy and Power Technologies	Biotechnology Design  Technology Bowl
<b>Understanding Refinement Techniques</b>			
Define <i>refinement</i> .	English: 10.3, 11.3	16. Energy and Power Technologies	Technology Bowl
Describe which energy sources require refinement.	English: 10.5, 11.5	16. Energy and Power Technologies	
Research refinement techniques.	English: 10.5, 10.8, 11.5, 11.8	16. Energy and Power Technologies	Prepared Presentation
<b>Understanding Fuel Transport Logistics</b>			

<b>Task</b>	<b>SOL Correlation</b>	<b>ITEEA National Standards</b>	<b>TSA Competitive Events</b>
Trace the transport of oil and natural gas from extraction to energy production.	English: 10.5, 11.5  History and Social Science: GOVT.12, VUS.14, WG.17, WHIL.14	16. Energy and Power Technologies  18. Transportation Technologies	Technology Bowl
Trace the transport of solid fuel from extraction to energy production.	English: 10.5, 11.5  History and Social Science: GOVT.12, VUS.14, WG.17, WHIL.14	18. Transportation Technologies	Technology Bowl
Create a model of a fuel transportation method.	English: 10.1, 11.1  Mathematics: G.14, T.8, T.9, COM.15, COM.16, DM.1*, DM.2*, PS.8*	11. Apply the Design Process  12. Use and Maintain Technological Products and Systems	Biotechnology Design  Computer-Aided Design (CAD), Engineering  Engineering Design
<b>Exploring Energy Generation</b>			
Describe how energy sources are used to generate electricity.	English: 10.5, 11.5  History and Social Science: GOVT.12, VUS.14, WG.17, WHIL.14	16. Energy and Power Technologies	Technology Bowl
Describe other uses of energy sources (aside from electricity).	English: 10.5, 11.5	16. Energy and Power Technologies	

<b>Task</b>	<b>SOL Correlation</b>	<b>ITEEA National Standards</b>	<b>TSA Competitive Events</b>
	History and Social Science: GOVT.12, VUS.14, WG.17, WHIL.14		
Model a method of energy generation.		16. Energy and Power Technologies  3. The Relationships Among Technologies and the Connections Between Technology and Other Fields	Biotechnology Design  Computer-Aided Design (CAD), Engineering  Engineering Design
<b>Exploring Transmission, Distribution, and Storage</b>			
Define the (electrical) <i>grid</i> .	English: 10.3, 11.3	16. Energy and Power Technologies	Technology Bowl
Explain the role of electrical transmission, distribution, and storage.	English: 10.5, 11.5	16. Energy and Power Technologies	Principles of Technology (Virginia only)
Outline electricity's path from producer to consumer.	English: 10.6, 10.7, 11.6, 11.7	16. Energy and Power Technologies	Principles of Technology (Virginia only)
Illustrate the grid.		16. Energy and Power Technologies  3. The Relationships Among Technologies and the Connections Between Technology and Other Fields	Animatronics  Principles of Technology (Virginia only)

<b>Task</b>	<b>SOL Correlation</b>	<b>ITEEA National Standards</b>	<b>TSA Competitive Events</b>
Analyze grid modernization efforts.	English: 10.5, 11.5	13. Assess the Impact of Products and Systems  16. Energy and Power Technologies	Principles of Technology (Virginia only)
Differentiate transmission, distribution, and storage of gas and electricity.	English: 10.5, 11.5	16. Energy and Power Technologies	
Model components of a natural gas system.		16. Energy and Power Technologies  3. The Relationships Among Technologies and the Connections Between Technology and Other Fields	Biotechnology Design  Computer-Aided Design (CAD), Engineering  Engineering Design
<b>Exploring Environmental, Health, and Safety Aspects of Energy Production</b>			
Identify decommissioning and reclamation.	English: 10.5, 11.5	16. Energy and Power Technologies  5. The Effects of Technology on the Environment	
Diagram the life cycle of energy sources.		16. Energy and Power Technologies	
Identify environmental, health, and safety aspects of the energy life cycle.	English: 10.5, 11.5  History and Social Science: GOVT.12, VUS.14, WG.17, WHIL.14	16. Energy and Power Technologies  4. The Cultural, Social, Economic, and Political Effects of Technology	Essays on Technology  Technology Bowl

<b>Task</b>	<b>SOL Correlation</b>	<b>ITEEA National Standards</b>	<b>TSA Competitive Events</b>
		5. The Effects of Technology on the Environment	
Explain the role of regulatory agencies.	English: 10.5, 10.8, 11.5, 11.8  History and Social Science: GOVT.7, GOVT.8, GOVT.9, GOVT.15	4. The Cultural, Social, Economic, and Political Effects of Technology  6. The Role of Society in the Development and Use of Technology	Structural Design and Engineering  Transportation Modeling
<b>Exploring Energy Markets</b>			
Define <i>energy markets</i> .	English: 10.3, 11.3  History and Social Science: GOVT.14, GOVT.15	16. Energy and Power Technologies  3. The Relationships Among Technologies and the Connections Between Technology and Other Fields	Biotechnology Design  Technology Bowl
Identify factors that influence energy markets.	English: 10.5, 11.5	16. Energy and Power Technologies  3. The Relationships Among Technologies and the Connections Between Technology and Other Fields	

<b>Task</b>	<b>SOL Correlation</b>	<b>ITEEA National Standards</b>	<b>TSA Competitive Events</b>
		4. The Cultural, Social, Economic, and Political Effects of Technology	
Research an aspect of the energy market.	English: 10.8, 11.8	16. Energy and Power Technologies  3. The Relationships Among Technologies and the Connections Between Technology and Other Fields  4. The Cultural, Social, Economic, and Political Effects of Technology	Extemporaneous Speech  Prepared Presentation