Standards Correlations
Power and Transportation (8444, 8445)

Task/Competency	SOL	TSA Events
Demonstrating Personal Qualities and Abilities		
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* Science: 6.1, BIO.1, CH.1, ES.1, LS.1, PS.1	

Task/Competency	SOL	TSA Events
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, 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	

Task/Competency	SOL	TSA Events
	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	
Demonstrating Interpersonal Skills		
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 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,	

Task/Competency	SOL	TSA Events
	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 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	
Demonstrating Professional Competencies		
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,	

Task/Competency	SOL	TSA Events
	11.5, 11.6, 11.8, 12.1, 12.5, 12.6, 12.8 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, 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,	

Task/Competency	SOL	TSA Events
	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 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	

Task/Competency	SOL	TSA Events
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 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,	

Task/Competency	SOL	TSA Events
	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	
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	
Examining All Aspects of an Industry		
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	

Task/Competency	SOL	TSA Events
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	
Addressing Elements of Student Life		
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.		
Exploring Work-Based Learning		
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.		
Exploring Transportation Systems		
Define *transportation*.	English: 9.3, 9.5, 10.3, 10.5, 11.3, 11.5	Technology Bowl

Task/Competency	SOL	TSA Events
Identify types of transportation systems.	English: 9.5, 10.5, 11.5 History and Social Science: VUS.10	Technology Bowl Transportation Modeling
Differentiate between modes of transportation, including their effects on society.	English: 9.5, 10.5, 11.5 History and Social Science: WG.1, 15, 17; WHI.1, 6, 15; WHII.1, 4, 8, 9; VUS.1, 2, 6, 7, 8, 10, 11	Essays on Technology Technology Bowl Transportation Modeling
Describe components of transportation systems.	English: 9.3, 9.5, 10.3, 10.5, 11.3, 11.5	Technology Bowl
Explain regulations related to transportation.	English: 9.5, 10.5, 11.5 History and Social Science: WHII.14; VUS.13, 14	Technology Bowl
Evaluate the environmental impacts associated with different modes of transportation.	English: 9.5, 10.5, 11.5 History and Social Science: WG.2; WHII.14; VUS.14 Science: ES.8, ES.9, ES.11, ES.12	Geospatial Technology Technology Bowl
Identify emerging technologies in transportation.	English: 9.5, 10.5, 11.5 History and Social Science: WG.2; WHII.14; VUS.14 Science: ES.6	Geospatial Technology Technology Bowl Transportation Modeling Drone Challenge

Task/Competency	SOL	TSA Events
Design a delivery system.	English: 9.1, 9.5, 10.1, 10.5, 11.1, 11.5 History and Social Science: WG.1; WHI.1; WHII.1; VUS.1	System Control Technology Transportation Modeling
Introducing Energy and Power		
Differentiate between energy and power.	English: 9.3, 9.5, 10.3, 10.5, 11.3, 11.5 Science: PH.4	Technology Bowl Essays on Technology
Explain uses of power systems in transportation and other devices.	English: 9.5, 10.5, 11.5	Technology Bowl Transportation Modeling
Use instruments to collect quantitative data related to power systems.	English: 9.5, 10.5, 11.5 History and Social Science: WG.1; WHI.1; WHII.1; VUS.1 Science: PH.4	Principles of Technology (Virginia only)
Demonstrate safe work practices while participating in lab activities.	Science: CH.1	
Exploring Energy and Power		

Task/Competency	SOL	TSA Events
Compare energy sources.	English: 9.5, 10.5, 11.5 History and Social Science: WG.1; WHI.1; WHII.1; VUS.1 Science: ES.6	Biotechnology Design Technology Bowl
Differentiate among the methods of generating power.	English: 9.5, 10.5, 11.5 History and Social Science: WG.1; WHI.1; WHII.1; VUS.1 Science: ES.6	Biotechnology Design Engineering Design Geospatial Technology Technology Bowl
Identify types of energy conversion systems.	English: 9.5, 10.5, 11.5 Science: PH.3, PH.4	Biotechnology Design Technology Bowl
Identify the input, process, output, and feedback for each conversion method.	English: 9.5, 10.5, 11.5 Science: PH.4	Biotechnology Design Engineering Design
Describe the design process.	English: 9.5, 10.5, 11.5	Biotechnology Design Engineering Design
Design a power transmission system, using the systems approach.	English: 9.5, 10.5, 11.5 History and Social Science: WG.1; WHI.1; WHII.1; VUS.1	Biotechnology Design Engineering Design System Control Technology
Exploring Mechanical Power		
Identify the components of mechanical systems.	English: 9.5, 10.5, 11.5 Science: PH.4	Technology Bowl

Task/Competency	SOL	TSA Events
Calculate mechanical power.	Mathematics: A.1, A.4, AII.3 Science: PH.4	Biotechnology Design
Demonstrate principles of mechanical systems as they relate to power transmission.	Science: PH.4	Engineering Design
Explain basic mechanical systems, including simple machines.	English: 9.5, 10.5, 11.5 Science: PH.4	Engineering Design
Troubleshoot mechanical systems.	English: 9.5, 10.5, 11.5 Science: PH.4	
Exploring Fluid Power		
Identify the components of fluid power systems.	English: 9.5, 10.5, 11.5	Technology Bowl
Calculate fluid power.	Mathematics: A.1, A.4, AII.3	Engineering Design
Utilize hydraulic and/or pneumatic fluid systems to transmit power.		Engineering Design
Explain basic fluid systems, to include flow and pressures.	English: 9.5, 10.5, 11.5	Engineering Design
Troubleshoot fluid systems.	English: 9.5, 10.5, 11.5	
Exploring Electrical Power		
Identify components of electrical systems.	English: 9.5, 10.5, 11.5 Science: PH.8	Technology Bowl Principles of Technology (Virginia only)
Calculate electrical power.	English: 9.5, 10.5, 11.5 Mathematics: A.1, A.4, AII.3 Science: PH.8	Principles of Technology (Virginia only)
Utilize electricity to transmit power.	Science: PH.8	Principles of Technology (Virginia only)

Task/Competency	SOL	TSA Events
Troubleshoot electrical systems.	English: 9.5, 10.5, 11.5 Science: PH.8	
Exploring Power Transmission and Control		
Identify components of power transmission systems.	English: 9.5, 10.5, 11.5 Science: PH.4	Technology Bowl
Measure the performance of power transmission systems.	Science: PH.8	Biotechnology Design Engineering Design Principles of Technology (Virginia only)
Describe engine construction and principles of operation.	English: 9.5, 10.5, 11.5 Science: PH.4, PH.8	Technology Bowl
Modeling Transportation Systems		
Research the history of different fuels and their use in powering transportation systems.	English: 9.5, 9.8, 10.5, 10.8, 11.5, 11.8 History and Social Science: WG.1, 2, 4, 17; WHI.1, 2, 3, 5, 6, 7, 11, 13; WHII.1, 4, 8, 9, 13, 14; VUS.1, 2, 6, 7, 8, 9, 14	Transportation Modeling
Explain how the components of transportation systems interact.	English: 9.5, 10.5, 11.5	Transportation Modeling
Evaluate transportation system devices.	English: 9.5, 10.5, 11.5	Transportation Modeling
Evaluate overall system design.	English: 9.5, 10.5, 11.5	

Task/Competency	SOL	TSA Events
Design a transportation subsystem.	English: 9.1, 9.5, 10.1, 10.5, 11.1, 11.5 History and Social Science: WG.1; WHI.1; WHII.1; VUS.1	CAD Engineering Transportation Modeling
Construct a subsystem, or model of a subsystem, based on your design.	English: 9.5, 10.5, 11.5	System Control Technology Transportation Modeling
Evaluate subsystem/model.	English: 9.5, 10.5, 11.5	System Control Technology Transportation Modeling
Exploring Careers in Power and Transportation		
Research careers related to power and transportation.	English: 9.5, 9.8, 10.5, 10.8, 11.5, 11.8 History and Social Science: WG.1; WHI.1; WHII.1; VUS.1	STEM Careers
Prepare a résumé for a chosen career.	English: 9.5, 9.6, 9.7, 10.5, 10.6, 10.7, 11.5, 11.6, 11.7 History and Social Science: WG.1; WHI.1; WHII.1; VUS.1	STEM Careers
Present research on a chosen career.	English: 9.1, 9.5, 10.1, 10.5, 11.1, 11.5 History and Social Science: WG.1; WHI.1; WHII.1; VUS.1	STEM Careers