

Energy Matters

1. **DESCRIPTION**: Teams will be assessed on their knowledge of the physical properties of matter and the behavior of solids, liquids, and gases before and after they undergo changes or interactions as well as energy forms, transfer of energy, physical changes, and changes in states of matter due to heating and cooling.
2. **ESSENTIAL STANDARDS ALIGNMENT**: 3.P.2, 3.P.3, 4.P.1, 4.P.2, 4.P.3, 5.P.2, 5.P.3, 6.P.2, 6.P.3.
3. **TEAM OF UP TO**: 2
4. **MAXIMUM TIME**: 50 min.
5. **TEAMS**: Teams must bring writing instruments and goggles. Teams may not bring other resources to this event.
6. **EVENT LEADERS**: Will provide a hands-on event with all necessary items, objects, materials, questions, and response sheets for participants to complete stations.
7. **SAFETY REQUIREMENTS**: Goggles
8. **IMPOUND**: No
9. **THE COMPETITION**: This event will be run in a station format. Teams will rotate through stations that assess any or all of the following topics. There will likely be a hands-on lab portion to this event.
 - a. The sizes, charges, and parts of an atom.
 - b. The behavior of atoms in different states of matter (solid, liquid, gas) regarding shape, volume, and relative speed of the atoms.
 - c. The concept of relative density and how it can be changed in solids, liquids, and gases.
 - d. The properties of matter to include: attraction to magnets, flexibility, conductivity of heat and/or electricity, strength, and reaction to water.
 - e. How substances can change when they are heated or cooled.
 - f. Given a description or demonstration, be able to explain whether a chemical or physical change has occurred based on the properties of the original and new materials.
 - g. The basic forms of energy and how they travel: electrical, heat, light, magnetic, and sound.
 - h. The basic forms of energy and how can be converted from form to another: electrical, heat, light, magnetic, and sound.
 - i. How energy can be transferred from one object to another (conduction, convection, friction, radiation).
10. **SCORING**:

Points will be awarded for the accuracy of responses. Ties will be broken by the accuracy or quality of responses to pre-selected questions chosen by the event leader.
11. **EVENT RESOURCES**:

See the Event Resources tab on our website at www.sciencenc.com for instructions, videos and more.