



School Guide to Smart Surfaces

Case Study: Chariho Regional School District, RI



In collaboration with:





Case Study - Smart Surfaces at School

Schools across the U.S. regularly experience extreme heat, floods and other disasters due to a changing climate. The American Lung Association is promoting practical solutions, such as Smart Surfaces, to address the impacts of excessive heat and improve the health of people across America. Smart Surfaces encompass a suite of proven, cost-effective solutions designed to mitigate heat, enhance air quality and improve health. During the summer and fall of 2025, the Lung Association worked with the Chariho Regional School District to pilot various Smart Surfaces solutions.



Chariho Regional School District

The Chariho Regional School District serves communities of Charlestown, Richmond and Hopkinton, Rhode Island and in close proximity to the Narragansett Indian Tribe. Known for its close-knit character and strong community engagement, the district spans a wide geographic area, bringing together students from three towns into a unified educational system focused on academic excellence, student well-being and long-term sustainability.

Chariho operates three elementary schools, a regional middle and high school campus, the widely respected Chariho Career & Technical Center and an Alternative Learning Academy. This structure allows the district to offer both traditional academic pathways and hands-on career preparation, giving students access to diverse learning experiences in a supportive environment.

In recent years, Chariho has prioritized improvements that enhance health, safety and environmental resilience across its campuses. Initiatives such as outdoor learning enhancements, energy-efficient upgrades and green-infrastructure projects align with the district's broader commitment to creating learning environments that are comfortable, safe and future-ready.



Heat at School | Before Installing Smart Surfaces

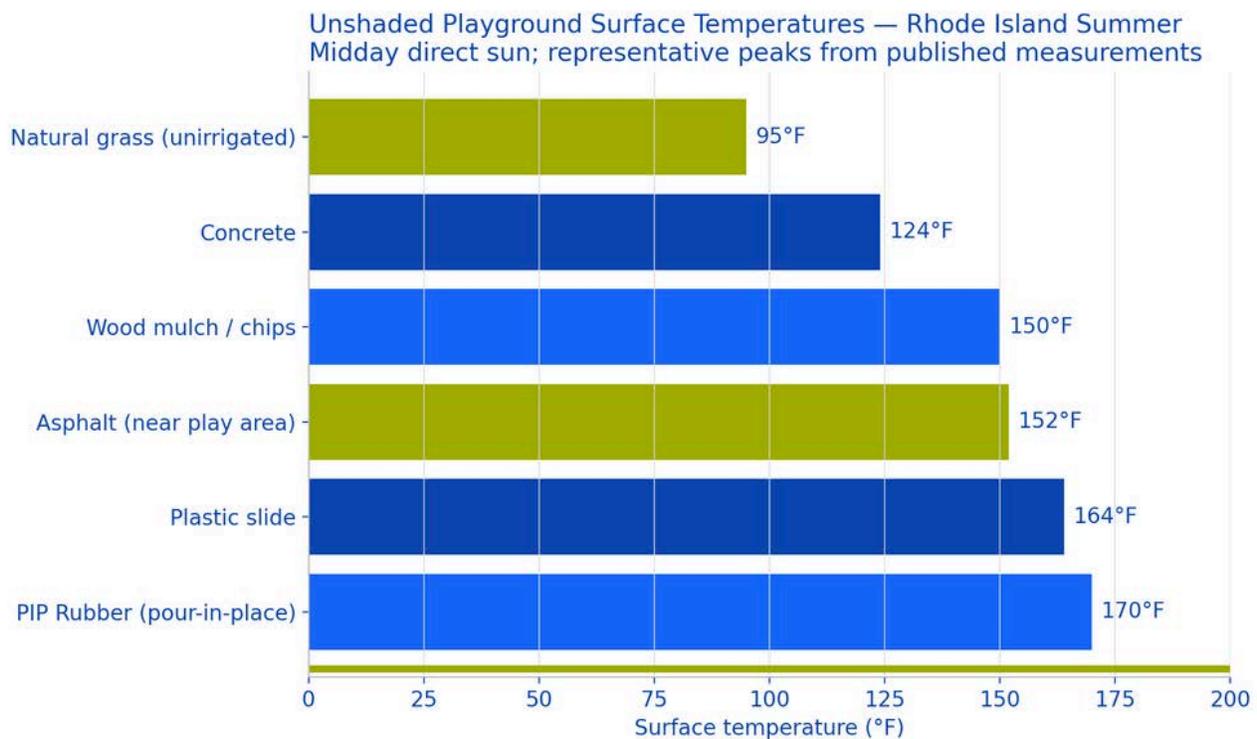
While Rhode Island's air temperature may be 82°F, an unshaded playground can easily reach:

- 100–120°F on rubber surfacing
- 130–160°F on metal slides or platforms
- 20–40°F hotter than the surrounding air on average

Why it gets so hot:

- Dark rubber and plastic absorb solar radiation.
- Metal amplifies heat dramatically.
- No shade means continuous direct sun exposure.
- Humidity (common in Rhode Island summers) increases perceived heat.

An unshaded Rhode Island playground in summer typically feels dangerously hot, with surface temperatures often 30–60°F hotter than the air. Even on an 85°F day, equipment can exceed 130°F, which is hot enough to cause burns and heat stress.



Charlestown Elementary School, Prior to Shade Structure Installation



Testimonial from Chariho Regional School District

The Chariho Regional School District is undergoing a remarkable transformation with the use of Smart Surfaces to enhance comfort, safety and overall well-being of our students and staff. In partnership with the American Lung Association's Smart Surfaces initiative, the District installed two outdoor shade structures at Charlestown Elementary School. The District has also begun strategically planting trees across campus and we have installed reflective window coverings which are bringing numerous benefits.



The outdoor shade structures at Charlestown Elementary School have quickly become some of the most valued spaces on our grounds. It provides cool, reliable protection from direct sun, allowing students to learn, gather and play outdoors even on the warmest days. We hope this will leave students less fatigued after spending time in shaded areas and show our district's commitment to creating healthier outdoor environments.



Testimonial from Chariho Regional School District continued

We hope that our tree-planting initiative will deliver benefits that go far beyond aesthetics. The new canopies will offer natural cooling, reduce heat buildup around our buildings and create inviting green spaces that support both physical and mental well-being. These trees will continue to enhance our campuses for generations, reinforcing our long-term commitment to sustainability.



Inside our buildings, HVAC controls are being installed, which will create more comfortable classrooms throughout the school day and improve indoor air quality and comfort.



Together, these upgrades have strengthened our district's mission to provide safe, healthy and supportive learning environments. We are proud of the measurable improvements in heat reduction and the positive effects on student wellness. We view these enhancements as essential investments in the future of our school community.





Smart Surfaces Solutions

Shade Structures and Sun Sails effectively prevent heat by blocking direct sunlight. Shade structures near buildings can also reduce indoor temperatures by providing shade over windows, reducing the need for air conditioning. Shade structures over outdoor playgrounds and recreation areas can create a more comfortable environment.



Planting trees is a reliable way to turn CO₂ into oxygen, remove pollutants from the air and reduce flood risk. Trees also reduce ambient temperature through shading and evapotranspiration, lowering reliance on energy-intensive air conditioning.

Reflective windows, walls and roofs are light-colored and engineered to reflect most sunlight, reducing the heating of outdoor air. Traditional dark-colored roofs absorb more of the light that falls on them, radiating heat into the building and the surrounding air, which increases cooling costs and energy consumption while decreasing comfort.





When you can't breathe, nothing else matters.®

[Lung.org/Smart-Surfaces](https://www.lung.org/Smart-Surfaces)