



CASE STUDY

CLEANER AIR AND LOWER ENERGY USE IN RHODE ISLAND SCHOOLS

Problem & Context



Schools need safer indoor air, but ventilation is energy-intensive and outdoor air quality is increasingly poor.

Smart Air Cleaning Deployment



Chariho Middle School piloted Tatama™ air cleaners and sensors that operate independently of HVAC.

Pilot Findings



Tatama™ reduced fine particles and VOCs with potential energy savings of as much as 57% per classroom.

Background

Chariho Regional School District, which serves approximately 3,000 students across the towns of Charlestown, Richmond, and Hopkinton in southern Rhode Island, is nationally recognized as a **Green Ribbon School District** for its commitment to sustainability. To address indoor air quality (IAQ) challenges and improve energy efficiency, the district partnered with Metalmark Innovations to pilot the Tatama™ ceiling-mounted air cleaning system, designed to maintain or improve IAQ while reducing HVAC energy consumption.

Challenge

K–12 schools must improve air quality while reducing energy use—a challenge as outdoor air becomes less reliable and concerns about airborne disease transmission persist. Traditional HVAC systems rely on outdoor ventilation, which is:

- **Energy-intensive:** Drives up to 50% of HVAC load
- **Poor at filtration:** Misses some key pollutants
- **Thermal comfort first, not clean air:** HVAC airflow can work against pollutant removal

Schools need efficient indoor air solutions that don't depend on high ventilation or major retrofits.



Solution

Metalmark Innovations deployed Tatama™ units and sensors at Chariho Middle School in Rhode Island.

Goal: Validate whether or not smart, localized, low-touch air cleaning could improve IAQ and reduce HVAC ventilation load—leading to measurable energy savings.

Results

Cleaner Air, Fast

- Up to 34% reduction in sub-0.5 μm particles in just 5 minutes.
- Up to 5X more effective than ventilation alone for particulate matter (PM_{1.0} and PM_{2.5}).
- Targets the size range of respiratory aerosols of diseases (e.g., COVID-19, flu, measles).
- Tatama significantly reduced volatile organic compound (VOC) levels, independent of other factors.

Opportunity for Major Energy Savings

Tatama's air quality improvements create an opportunity to reduce outdoor air ventilation. Modeling shows that reducing ventilation rate from 25% to 10% could lower heating energy use by up to 57% per classroom:

- Annual savings: Up to 13 MMBTUs and 990 kg CO₂-eq
- Minimal Tatama energy use: ~211 kWh per year

Customer Feedback

“ It's **quiet**. Our air cleaner is up inside the ceiling so we don't notice any noise. ”

“ The air purifier that was in my classroom from last year is bulky and big. **I didn't even realize the Metalmark was in my room.** ”

“ **I did not have any respiratory illness this year.** ”

“ The people from the company that came to check the cleaner were always very nice and pleasant. They were also very informative and helpful. ”



Tatama™ At-a-Glance



Autonomous Operations



Built-in Real-Time Monitoring



Smart, Self-Renewing System



Energy Efficient Comfort



Low Noise & Distraction

- As much as 5X effectiveness at removing airborne pathogens
- Real-time sensors track PM, VOCs, CO₂, temperature, humidity & more
- Smart adjustments based on IAQ and occupancy
- Filter self-renewal enables up to 5-year filter life and 10X maintenance savings
- Safety certified by TUV SUD per UL

