



Energy and Environment Cabinet

September 10, 2012

Moving to Net Zero Energy Schools

NASEO 2012 Annual Meeting

Richardsville Elementary School



**First Net-Zero Energy School in U.S.
Warren County Kentucky School District
Sherman-Carter-Barnhart Architects, CMTA MEP Engineers**

Photo Courtesy Sherman-Carter-Barnhart Architects

Richardsville Elementary



Photos Courtesy Sherman-Carter-Barnhart Architects

Facility Size – 72,285 SF, serving 500 students

Uses 75 % less energy than the average American school

Opened Fall 2010 – Roof PV completed October 2011 – Canopy PV January 2012

As of August 2012, Richardsville Elementary earned a credit of \$33,574 in energy costs.

Richardsville Elementary



Cost – \$15.2 million (with solar)
\$12.4 million (without solar)

Photos Courtesy Sherman-Carter-Barnhart Architects

Locust Trace AgriScience Farm



**Fayette County School District Kentucky
Tate Hill Jacobs Architects
CMTA MEP Engineers**

Photo courtesy Tate-Hill-Jacobs Architects & Fayette County Schools

Locust Trace AgriScience Farm



Opened Fall, 2011
Cost of Construction – \$235/sf
Total gross square footage – 66,438
Academic/Admin. Building, Arena,
Greenhouse, Store/Sales Pavilion

Photo courtesy Tate-Hill-Jacobs Architects & Fayette County Schools

Locust Trace AgriScience Farm



Photos courtesy Tate-Hill-Jacobs Architects & Fayette County Schools

82 acres of federal land within
Fayette County

Equine Science Education Programs

State-of-the-art AgriScience Education
Center

Model for both sustainable principles
and “green collar” career education

Locust Trace AgriScience Farm



PV and solar tubes
on classroom
building

Solar thermal array
on classroom
building

PV on equine barn



Photos courtesy of Tate-Hill-Jacobs Architects and Fayette County Schools



Locust Trace
AgriScience
Farm
Net Zero
Water use +
Sustainable
Water
Discharge



Locust Trace AgriScience Center

Education + Inspiration

Site and Building as Teaching Tools

Uses National Guidelines and Benchmarks of Sustainability Principles



Turkey Foot Middle School



Kenton County School District Kentucky

PCA Architects
CMTA MEP Engineers
Opened 2010

Photo courtesy Kenton County School District

Turkey Foot Middle School Designed to be Net-Zero Energy



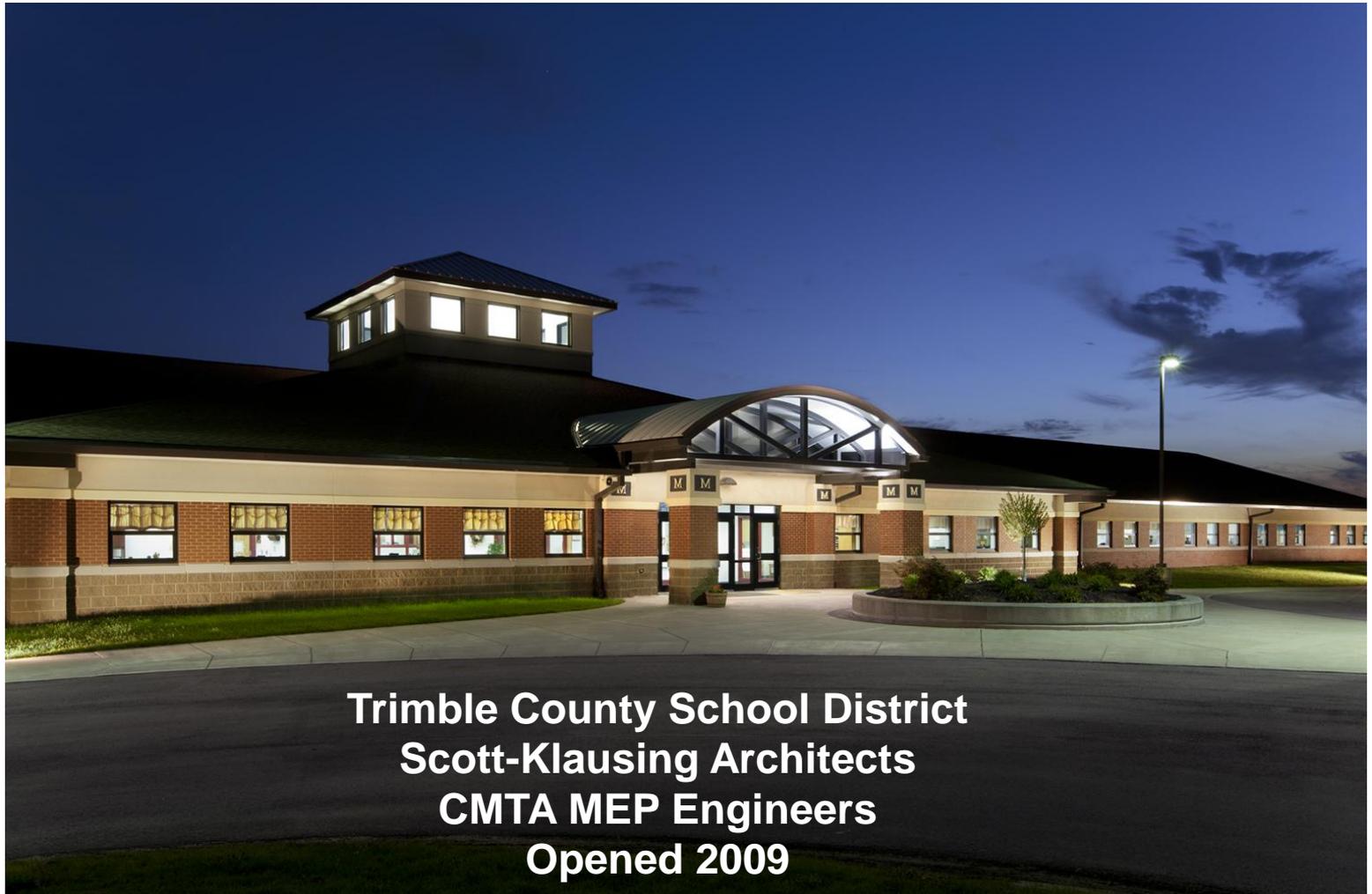
Photo courtesy Kenton County School District

Turkeyfoot Middle School

- ▶ School Size – 133,000 SF, serving 1,000 students
- ▶ PV system – 443 kW
- ▶ Roof PV completed May 2011
- ▶ Canopy PV completed April 2012
- ▶ Construction cost \$200 /sq ft with solar
- ▶ \$175 / sq ft without solar
- ▶ Uses 60% less energy than traditional American middle school.
- ▶ Operating at 12.9 kBtu per square foot with solar
- ▶ Annual savings first 12 months of roof PV \$134,000.

Kenton County School District has been recognized by EPA and an ENERGY STAR Leader for increasing the energy efficiency of its entire portfolio of buildings by 10 percent. District estimates it has surpassed \$1 million dollars in avoided energy costs and reduced annual CO2 emissions by more than 2,500 metric tons, the equivalent of planting 675 acres of trees.

Milton Elementary School



**Trimble County School District
Scott-Klausing Architects
CMTA MEP Engineers
Opened 2009**

Milton Elementary

- ▶ High Performing School
 - ▶ One of 7 Kentucky Schools to earn EPA ENERGY STAR score of 100
 - ▶ One of the lowest cost per square foot facilities in Kentucky.
 - ▶ Facility size – 47,300 square feet
 - ▶ Cost per square foot – \$149.46
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