

EMA'S ENGINEERING TODAY

SEPTEMBER 2012

Information and Helpful Hints for School Districts and the Architects who serve them.

Did you know...

- ★ EMA was started 38 years ago based on providing solutions for energy efficiency and green designs in schools and colleges?
- ★ EMA's first renewable energy school project was in 1978?
- ★ McKinney ISD schools were "green before green was cool?"

2012 IECC New Mandatory Requirements "But Wait, There's More!"

The **2012 International Energy Conservation Code (IECC)** contains new mandatory requirements for building envelope, mechanical systems, water heating, electric power, lighting, testing, commissioning and more. These new requirements add complexity, first cost, and maintenance. See May 2012, issue of EMA's Engineering Today for details.

"But Wait, There's More!" In addition to the base mandatory requirements there is an "energy trap" or "energy freedom" depending on one's point of view. The 2012 IECC requires selection of one additional more stringent requirement from a list of three choices. These choices are more efficient HVAC, reduced lighting power density, or on-site renewable energy.

Has the 2012 IECC given me three equal options? Not for schools. Let's explore these choices for a typical 81,191 ft² elementary school located in North, East, or Central Texas. The **HVAC option** increases efficiency from 13 SEER to 15 SEER for a classroom-size unit. There are also energy efficiency increases for the larger units serving gymnasiums, cafeterias, etc. **Lighting option** decreases interior lighting power density from a 2012 code base of 1.2 watts/ft² to 0.99 watts/ft². The **Renewal Energy Option** includes another choice of providing on-site renewable energy equal to 0.5 watt/ft² of conditioned building area or at least 3% of energy requirements for mechanical systems, water heating, and lighting.

ADDITIONAL REQUIREMENT OPTIONS

Option	First Cost Difference	Energy Savings (\$/yr)	Payback (yrs)
More Efficient HVAC	\$89,129	\$3,330	26.7
Reduced Lighting Power	\$27,360	\$4,788	5.7
Renewable Photovoltaic			
0.5 w/ft ²	\$284,200	\$7,194	39.5
3% Option	\$158,130	\$3,965	39.9

Based on the above elementary school example, the likely choice would be the reduced lighting power density option using 28-watt, T5 lamps (2 lamps/fixtures). It has the lowest first cost and quickest payback. The payback for the renewable (PV) option would be greater than the life of the equipment.

Another very appealing choice that would comply with the code is to select the more efficient HVAC option and select 17 SEER classroom equipment rather than the 15 SEER. The added first cost would be about \$104,045 for 17 SEER compared to \$89,129 for 15 SEER. However, the energy savings doubles, and the payback is 4.1 years going from 15 to 17 SEER.

For more information on these options, please contact EMA's James Tate, P.E. for lighting, Robert E. (Ed) Cliver, P.E. for HVAC and David Fisher, P.E. for renewable energy.



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SCHOOL EXPERIENCE

38 years
585 Texas ISDs
47 colleges and universities
Other schools throughout
the country

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Plan Now for Summer 2013 MEP Projects

Opportunities abound. Now is the time to begin planning for implementation of your deferred maintenance, infrastructure, and equipment upgrades.

Many projects including lighting, controls, power factor correction, retro-commissioning, building optimization, insulation, renewables, communications and energy tracking can be implemented before the summer of 2013.

For summer 2013 projects, now is the best time to identify projects, plan, prepare construction and bid documents and be ready to bid in January and February. By acting sooner, not later, long lead time equipment can be ordered for timely delivery, quality contractors secured and the last minute added cost and hassle avoided. Contact EMA's Gary Bristow, P.E. or Mike Clendenin, P.E. to discuss preparing a multi-year, district-wide master plan for your building systems. Master plans of building systems are facility planning documents that guide Owners in systematic budgeting, prioritizing, scheduling, and upgrading. **This results in reduced first costs, energy efficiency, and better student learning environments.**

Company Spotlight

The weeks of August 6th and August 13th, eighteen EMA designers, draftsmen, and managers attended 32 hours of updated REVIT training at the Computerland Training Center in Tyler, Texas. The training included in-house project setup, discipline specific design, family development and "best practices". EMA engineers have been using REVIT for some time. REVIT is specialized software that supports Building Information Modeling and easier export of design models for cross discipline coordination.



Danny Bennett

Danny Bennett won the annual EMA Golf Tournament recently held at Garden Valley Country Club. Danny shot an 86. *Way to go Danny!*



The annual EMA Ranger's Game was June 23. Lots of fun, food, and ice cream!

