



# Ohio School Boards Association Capital Conference and Trade Show

November 7 – 10, 2010

Greater Columbus Convention Center  
Columbus, Ohio

## Making solar pay

### Finance/facilities

Monday, November 8, 2010

9:00 a.m.

C 213–215

Tony Hans, principle, CMTA Inc.

Stephen Kramer, superintendent, Madeira City

David Templeton, board member, Madeira City

Kenji Matsudo, assistant superintendent, Madeira City

### Paperless Board Meetings

OSBA is working for you to provide the means for paperless board meetings.

BoardDocs is an innovative system that saves districts times and money. BoardDocs enables school boards to enhance communication among the administration, the public and the board through online, paperless board meetings.

Developed for school boards, this e-governance solution provides a means of immediately publishing and revising agenda items, support documents, policies and procedures via the Internet.

For more information contact Amanda Finney at (614) 540-4000 or (800) 589-OSBA. More information can also be found at [www.boarddocs.com](http://www.boarddocs.com).

### OSBA Mission

*OSBA leads the way to educational excellence by serving Ohio's public school board members and the diverse districts they represent through superior service and creative solutions.*


### Ohio School Boards Association

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Columbus OH 43235-6481  
(614) 540-4000 fax (614) 540-4100  
[www.osba-ohio.org](http://www.osba-ohio.org)

**Making Solar Pay**

*Madeira's path through Energy Conservation and a Power Purchase Agreement*

Presented at:  
OSBA Capital Conference  
November 8, 2010




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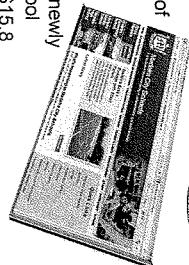
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**Welcome to Madeira**

- Suburban district: NE of Cincinnati
- 1500 students
- Rated Excellent
- 2 New Buildings and newly Renovated High School
- Operating budget of \$15.8 million
- Tax base mostly residential

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**CMTA**



- Top 50 MEP Engineering Firm Nationally
- Offices in Kentucky, Indiana and Texas
- Multiple current projects in Construction & Design in Ohio.
- Specializes in High Performance School design.
- 41 ENERGY STAR Projects
- 23 LEED Projects
- 100% LEED APs on all projects.

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**Leaders in Sustainable Design**



- Green Design
- Geothermal, daylighting, energy recovery systems, solar thermal and solar photovoltaics.
- Technology
- Data Networks, Data Centers, Networking, VoIP, Wireless and Distance Learning Systems.

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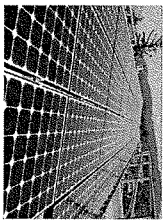
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**What we hope to share .....**

- Understanding Why
- The Madeira Story
- Integrating Curriculum
- The PPA RFP process
- Available Resources
- Questions



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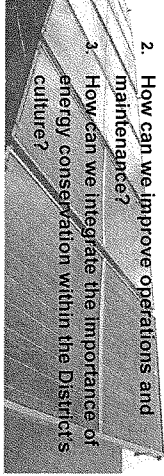
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**"What are the measures the District could take to further save energy and thus reduce our operational costs?"**

In other words .....

1. How can we reduce consumption?
2. How can we improve operations and maintenance?
3. How can we integrate the importance of energy conservation within the District's culture?



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### Where we began .....

- Planning Commission Report – March 2009
- Commissioned study on energy efficiency
- Whatways might we improve efficiency and save money
- Recommendation for an audit
- **Professional Energy Assessment – July 2009**
- Identify options to reduce energy consumption
- No cost, Low cost, High cost options
- Recommendations centered on lighting and HVAC concerns (\$12,500)

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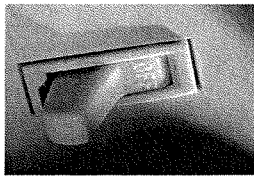
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### Phase I Energy Projects – November 2009

- Lighting Level Reductions in ALL Buildings
- Occupancy Sensors in Classrooms at MES, MMS
- Small Gym / Wrestling Room Lighting Replacement
- Outside Air System Improvements
- VAV tie in to Occupancy Sensors in Classrooms at MES, MMS
- Controls Reprogramming




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### The ABC's of Energy Conservation

- A. **Awareness** – Involving and educating all stakeholders in reducing energy usage is vital to the District's success
- B. **Behavioral Changes** – Necessary to save \$\$ and energy
- C. **Consumption** – Only variable District can control
- D. **Dedication** – Success Starts from the Top

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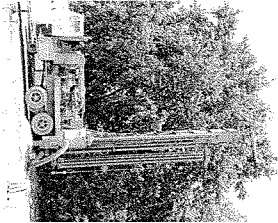
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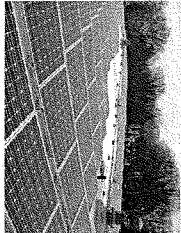
### Phase II Energy Projects – June 2010

- MHS Geothermal / HVAC – replacement of aging chiller and inefficient heating system
- Measurement & Verification
- Vital Signs Display /Curriculum Component
- MES & MMS Louvers

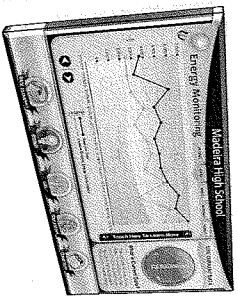


### Phase III Energy Projects – August-November 2010

- Reduce energy consumption through ABC'S
- Create District Energy Team
- Develop a formal Solar RFP
- Presentation to BOE that includes: cost savings, installation proposals and best competitive solar power purchase rate
- Signed Solar PPA
- Complete "Vital Signs" energy dashboard
- Provide math & science Curriculum Integration



### Curriculum Integration



- Getting Teachers Involved
- Providing Real Time Data
- Provide Digital Interface geared toward Students

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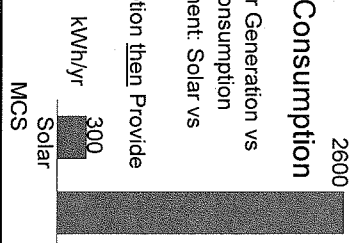
### Benefits to Schools

#### PPA with Third Party vs. Self Ownership

- No upfront capital investment
- All tax incentives, grants, rebates taken to reduce price of power
- Customer pays only for power produced
- Lock in price to hedge against rising energy costs
- Third party monitors system performance and maintains system
- Significant initial investment
- Schools not eligible for tax incentives
- Customer still pays for system if it is not performing
- Customer must learn complexities SREC negotiating
- Long term payback, lower return on investment

### Generation vs Consumption

- 300,000kWh Solar Generation vs 2,600,000 kWh Consumption
- Return on Investment: Solar vs ECMS
- Reduce Consumption then Provide Generation



### Benefits of a PPA to the Developer:

- Tax Shelter & Return on Investment :
- Federal Tax Credit
- Ohio State Grant (Currently \$200,000)
- Solar Renewable Energy Credits (SRECs)
- Energy Production

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### Key Considerations in PPA

- ☼ Cost for solar electric
- ☼ Size of the array
- ☼ Term of the agreement
- ☼ Fixed price vs. fixed escalator
- ☼ Installation type and installer experience
- ☼ Stability of the investor




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### Key Resources

- Madeira PC Study
- Articles
- Press Releases



[www.madeiracityschools.org](http://www.madeiracityschools.org)  
[www.cmtaegr.com](http://www.cmtaegr.com)

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### Questions & Contact Info.



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