# High Performance Schools

## Advanced Design & Technologies Seminar

Presented by:
Department of Energy Rebuild America
Florida Energy Office
Rebuild Sarasota County

Sponsored by:
Interface Inc., and Magnaray International

# Overview of Day

- Logistics
- Goals for the day
- What is Rebuild America?
- What is a High Performance School anyway?

# *Agenda*

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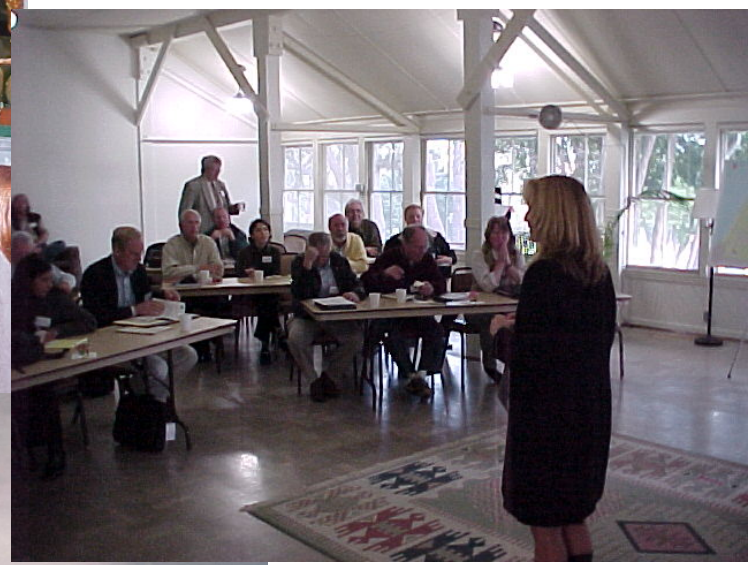
|---|---|
| • 9:00 a.m. – 9:15 a.m. | Introductions and Overview of Day |
| • 9:15 a.m. – 10:00 a.m. | HP Design and Process |
| • 10:00 a.m. – 10:45 a.m. | Site Design |
| • 10:45 a.m. – 11 a.m. | Break |
| • 11 a.m. – 11:45 a.m. | Lighting |
| • 11:45 a.m.. – 12:30 p.m. | Daylighting |
| • 12:30 p.m. – 1:15 p.m. | Lunch |
| • 1:15 pm – 2 p.m. | Commissioning |
| • 2 p.m. – 2:45 p.m. | Benefits – High Performance School |
| • 2:45p.m. – 3 p.m. | Break |
| • 3 p.m. – 3:45 p.m. | HVAC |
| • 3:45 p.m. – 4:15 p.m. | Local Programs |
| • 4:15 p.m. – 4:30 p.m. | Wrap Up and Adjourn |

# Rebuild America

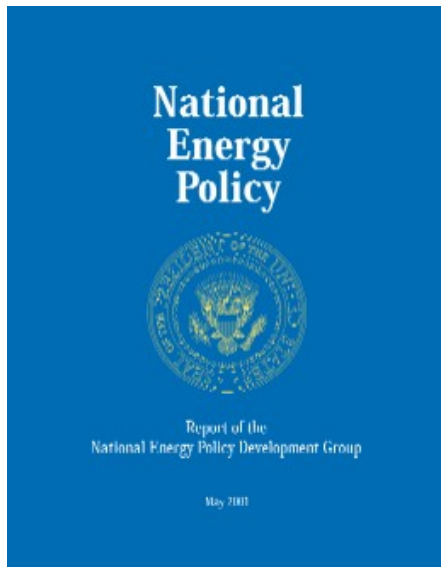



What's it all about anyway?

# National Priority: Reduce Energy Intensity

Conservation Goals

Infrastructure Goals




Environmental Goals

Security Goals

EERE Research + Deployment

Integrated Systems Approach to Schools, Housing, Public and Commercial Buildings, Factories, Vehicles, and Electricity Transmission Systems

# Market Sector

1. K-12 Schools
2. Public & Multifamily Housing
3. Colleges & Universities
4. State & Local Government
5. Businesses - Commercial Buildings

# Communities Challenge

7 Goals


- Save energy
- Save money
- Reduce pollution
- Create jobs
- Revitalize neighborhoods
- Boost economic development
- Educate next generation

# RBA / K-12 Challenges

- Determine local needs and choices
- Match new energy technologies, products and services to schools needs
- Increase awareness
- Strengthen analytical underpinnings


Rebuild America Mission

To build partnerships among communities, states and the school sector to improve building performance, and to connect people, resources, ideas and practices for energy solutions to community needs.

# Goals of Rebuild America's EnergySmart Schools

- Improve teaching and learning environments
- Reduce energy consumption and costs
- Increase use of clean energy
- Help schools reinvest energy savings
- Increase student, teacher, parent, and community awareness and involvement

# Measuring Success

## *9 trillion Btu Saved Annually*

= Removing 131,000 cars from the road

= Preventing the burning of all of the coal carried in 4,266 100-ton railroad cars

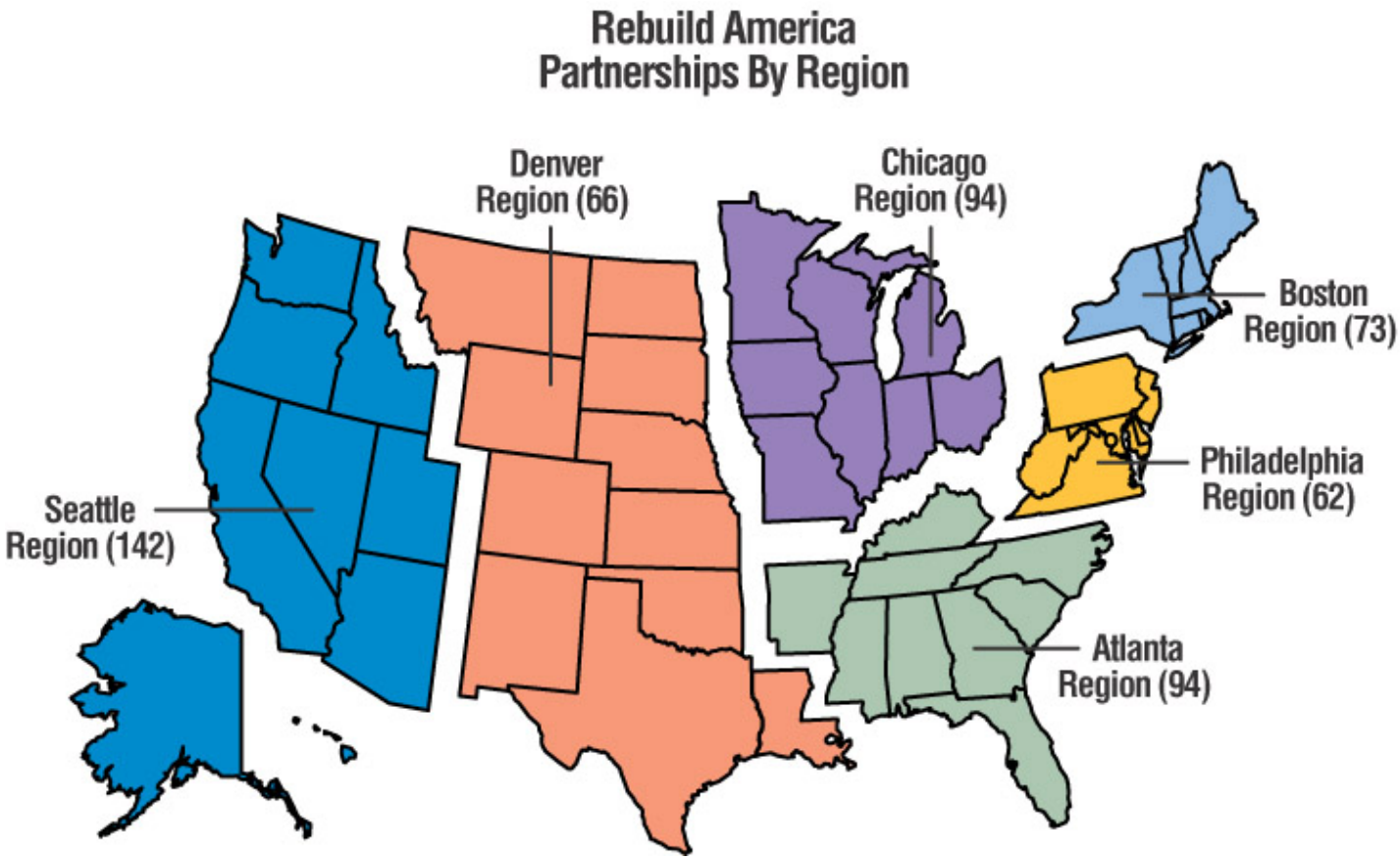
= Saving all of the electricity used in one year by 270,000 Americans

# Measuring Success

*529 msf of Space Improved*

= Combined space of 264,500 single family homes in the U.S.

# Rebuild America is divided into 6 regions



# Did You Know? K12 Sector Facts

- 14,800+ districts – 53 mil. Students – public and private
- Average district size is 1040 students
- Average age of nations schools 42+ years
- Majority of schools built before 1970

# Did You Know? K12 Sector Facts (cont.)

- GAO Report -- 41%  report unsatisfactory energy efficiency
- As much as $275 billion needed to improve nations schools
- Approx. $55 million is schools constructed daily
- Estimated $85,000 in energy inefficiency being built in each day

# Some other little know energy info in schools:

- Average cost per student for Energy -- $135-145, 300+
- Cost per square foot range from  $0.30 to over $2.50
- Cost to leave a computer on  from $0.01 to 0.03/hr
- Copier left on all day and night up to $150+/year
- Cost to run a Soft Drink Machine – up to $300/year
- A leaking faucet – 20 drips per min – $3.15/year
- Urinals -- $450/year in water/sewer/maintenance

# What is a High Performance School?

- Healthy and Productive
- Cost Effective
- Sustainable

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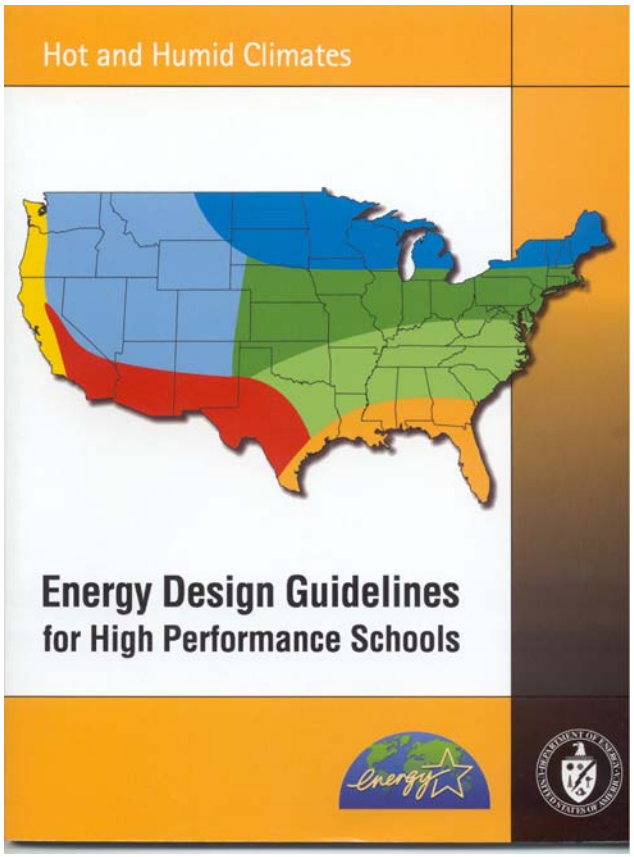
# What value, a HP School?

- **Incorporates energy-efficient systems (minimal energy use with maximum output)**
- **Operates in harmony with the environment**
- **Uses materials and resources without negatively impacting the future**
- **Serves as a “3-D teaching tool”**
- **Enables students, staff, and building to perform at highest level**

# What is a High Performance School?

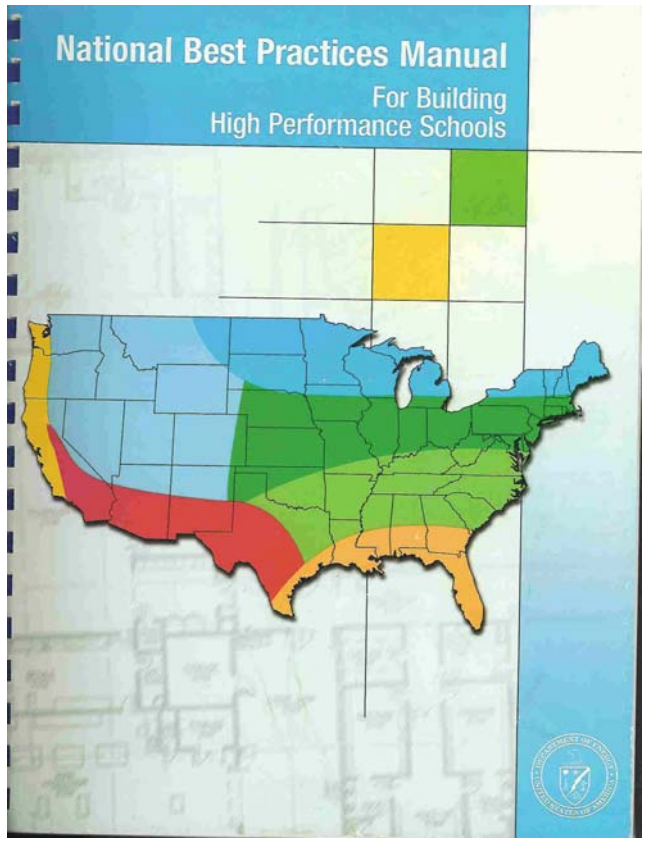
- Environmentally Responsive Site Planning
- Energy Efficient Building Shell
- Day-lighting
- High Performance HVAC
- High Performance Electric Lighting
- Renewable Energy
- Indoor Air Quality
- Acoustical, Visual, Thermal Comfort
- Environmentally Preferable Materials and Products
- Energy Analysis Tools, Life Cycle Cost Analysis, Commissioning
- Water Efficiency
- Safety and Security

# Reference Material Available from RBA




**Climate Types**

1. Hot/dry
2. **Hot/humid**
3. Temperate mixed
4. Temperate humid
5. Cool / dry
6. Cool / humid
7. Cold/ humid




Available in Rebuild America Solution Center-
http://www.rebuild.org/lawson/productservices.asp

Building High Performance Schools is essential for the future of our nation and its students.

Inaction results in the mortgaging our children's and grandchildren's future.

If you are not taking action now, when will you?

THE FUTURE IS NOW