Energizing Sustainable Communities

Carolyn Sarno Goldthwaite

John Balfe

Agenda

- Introductions and Background
- CAPEE Overview
- High Performance Schools
- Benchmarking
- ACE Project
- Other Resources

Northeast Energy Efficiency Partnerships

"Assist the Northeast and Mid-Atlantic region to reduce building sector energy consumption 3% per year and carbon emissions 40% by 2030 (relative to 2001)"

Mission

We seek to accelerate regional collaboration to promote advanced energy efficiency and related solutions in homes, buildings, industry, and communities.

Vision

We envision the region's homes, buildings, and communities transformed into efficient, affordable, low-carbon, resilient places to live, work, and play.

Approach

Drive market transformation regionally by fostering collaboration and innovation, developing tools, and disseminating knowledge

Thanks to our Allies Network

Group Introductions

1. Name
2. Affiliation
3. Biggest challenge

Today's Presentation…

Goals

- Discover **Strategies & Resources** for Communities
- Discuss **Challenges and Opportunities** in WV
- Gain Insights & Data Needed to Achieve **Stakeholder Buy-In**

Format

- Topic
- Overview & Discussion
- Resources
- Stats & Figures

Introducing CAPEE

A comprehensive tool for your community's needs

Community Action Planning for Energy Efficiency

CAPEE

Focus: Small-Mid Size, Rural Communities

Objective: Reduce energy usage and carbon emissions

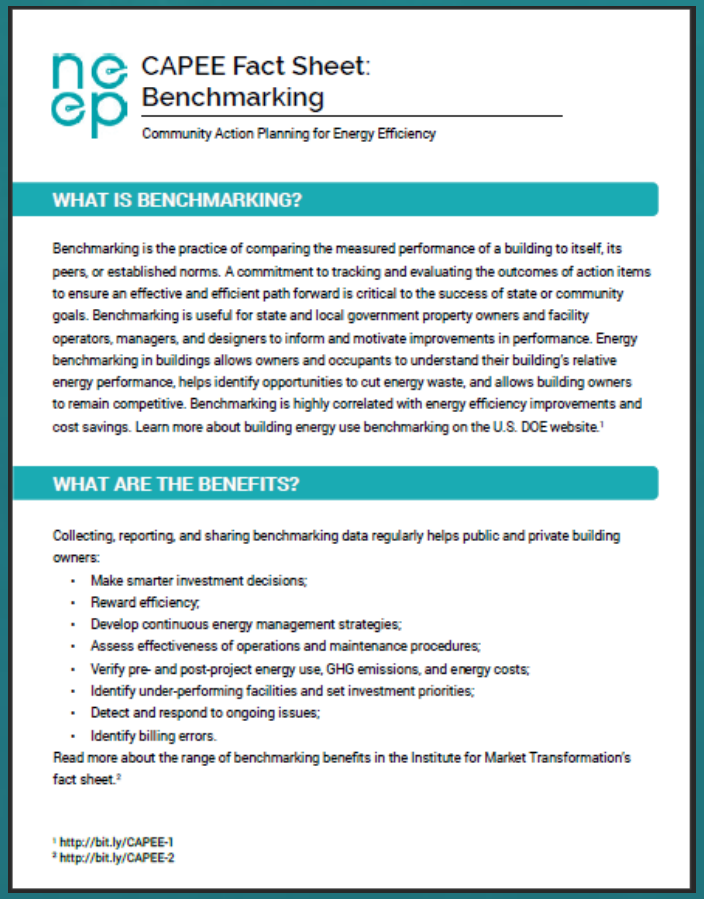
How: Interactive online platform with resources for any community, regardless of current status

Task Force: Community level stakeholders informed the project along the way

How Does it Work?

Getting Started	• Energy Committee • Benchmarking & Turning Data into Action
Next Steps	• LED Street Lighting • Operations and Maintenance • High Performance Buildings
Planning Ahead	• Energy Master Planning • Energy Codes • Green Building Policies

Example Fact Sheet



CAPEE Fact Sheet:
Benchmarking

Community Action Planning for Energy Efficiency

WHAT IS BENCHMARKING?

Benchmarking is the practice of comparing the measured performance of a building to itself, its peers, or established norms. A commitment to tracking and evaluating the outcomes of action items to ensure an effective and efficient path forward is critical to the success of state or community goals. Benchmarking is useful for state and local government property owners and facility operators, managers, and designers to inform and motivate improvements in performance. Energy benchmarking in buildings allows owners and occupants to understand their building's relative energy performance, helps identify opportunities to cut energy waste, and allows building owners to remain competitive. Benchmarking is highly correlated with energy efficiency improvements and cost savings. Learn more about building energy use benchmarking on the U.S. DOE website.[1]

WHAT ARE THE BENEFITS?

Collecting, reporting, and sharing benchmarking data regularly helps public and private building owners:

- Make smarter investment decisions;
- Reward efficiency;
- Develop continuous energy management strategies;
- Assess effectiveness of operations and maintenance procedures;
- Verify pre- and post-project energy use, GHG emissions, and energy costs;
- Identify under-performing facilities and set investment priorities;
- Detect and respond to ongoing issues;
- Identify billing errors.

Read more about the range of benchmarking benefits in the Institute for Market Transformation's fact sheet.[2]

[1] http://bit.ly/CAPEE-1
[2] http://bit.ly/CAPEE-2

Example Sections:

- What is it?
- Why is it important?
- What are key things to know about the topic?
- What resources are out there?
- How do you make the business case for this initiative?

Diving into CAPEE

Benchmarking Overview

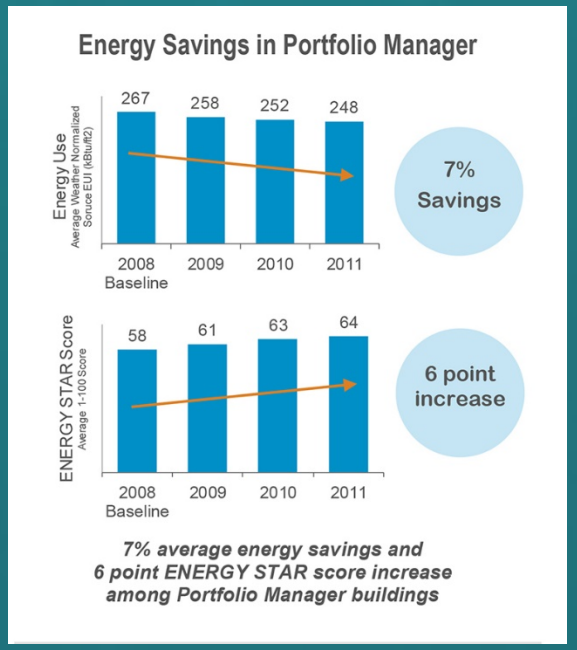
- Benchmarking is…
  - The tracking of building energy/water use
  - A way to compare building performance
- Benchmarking helps…
  - Plan and justify energy improvement projects
  - Track trends and verify pre/post energy use

Measure → Plan → Act

Benefits of Benchmarking

70% of FMs have used Energy Star Portfolio Manager to guide efficiency upgrade plans and 67% have used it to just an energy efficiency project [Source]

EPA Study: Over a three year period, buildings the benchmarked their buildings saved an average of 2.4% annually. [Source]



Related Resource: LBNL Evaluation of Energy Benchmarking Programs

Benchmarking Pathways

There are options…

- Lead By Example
- Voluntary
- Mandatory

Schools are the Center

Of Our Communities

A High Performance School is…

Safe

Clean

ENERGY EFFICIENT

Easy to maintain

HEALTHY

Cost Effective

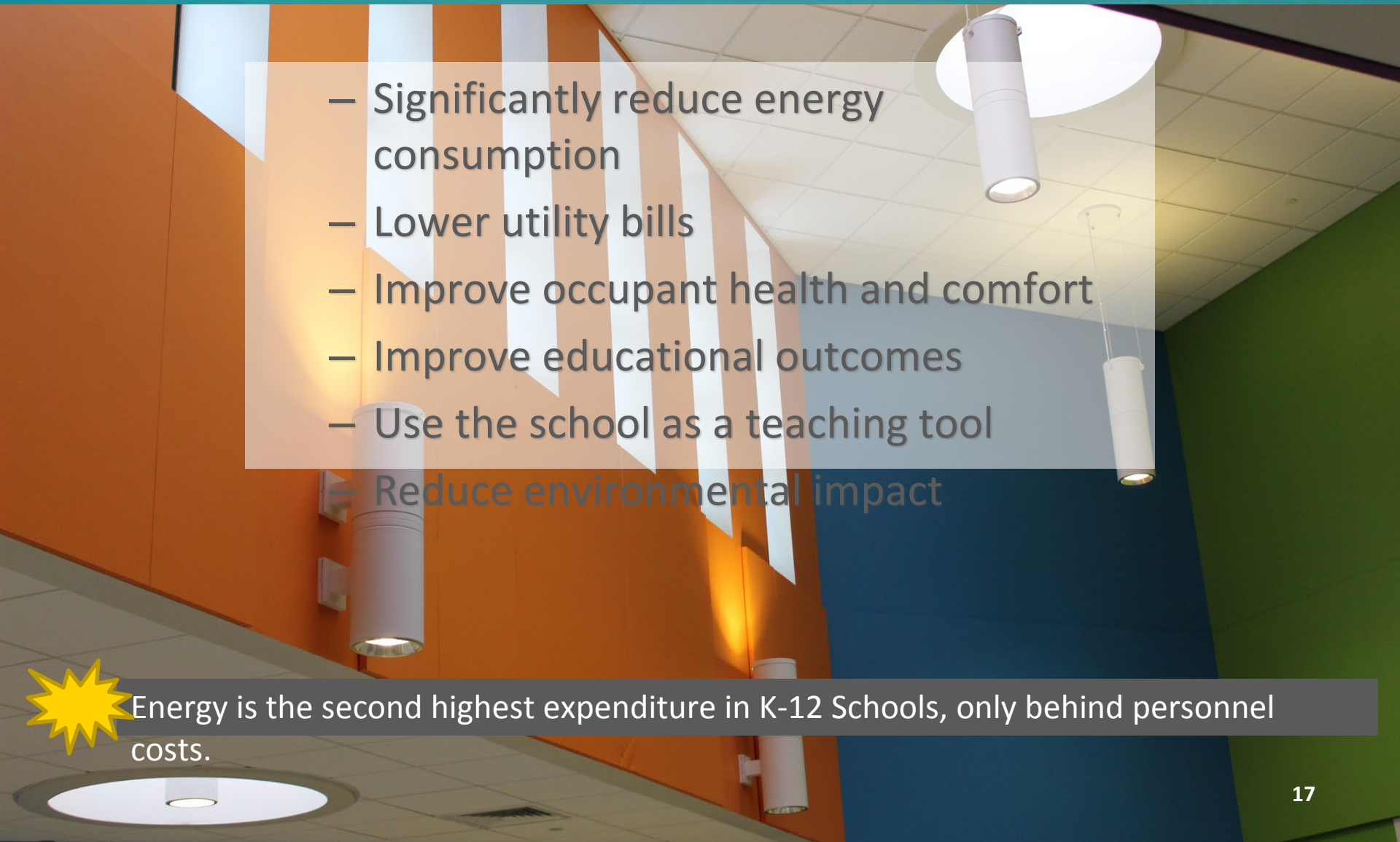
Educationally effective

SUSTAINABLE

Why Focus on Schools?

- More than a place for instruction
- Students spend more time in schools
- Reduced costs and better outcomes

Community-Wide Impacts



- Significantly reduce energy consumption
- Lower utility bills
- Improve occupant health and comfort
- Improve educational outcomes
- Use the school as a teaching tool
- Reduce environmental impact

Energy is the second highest expenditure in K-12 Schools, only behind personnel costs.

Discussion

- Is anyone building or renovating a school?
- What are your current challenges around schools?
  - O&M? New Construction? Renovations? Existing Buildings?

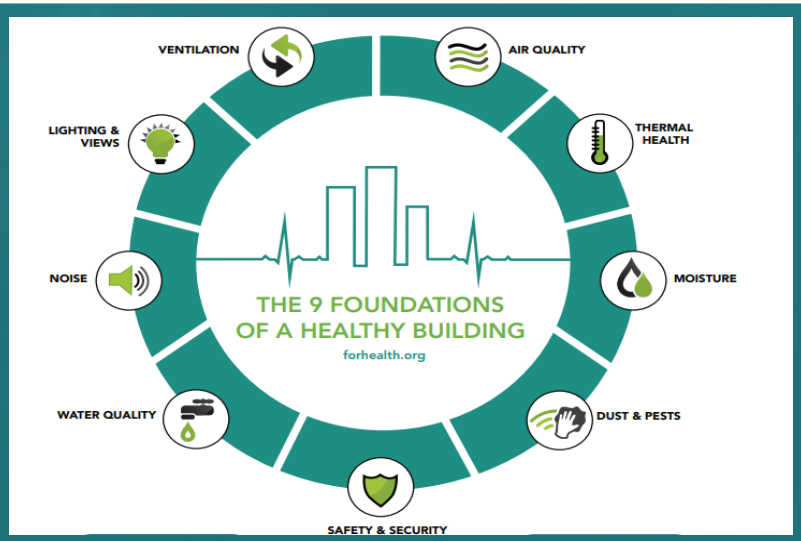
High Performance Schools

The Comprehensive Benefits

Energy: Utility Costs in N. Providence fell by ~49% from 2010 to 2013 (source)

Acoustics: Exposure to noise negatively correlates with children's learning outcomes and cognitive performance (source)

Air Quality: Increased ventilation rates result in higher test scores in elementary schools (source)



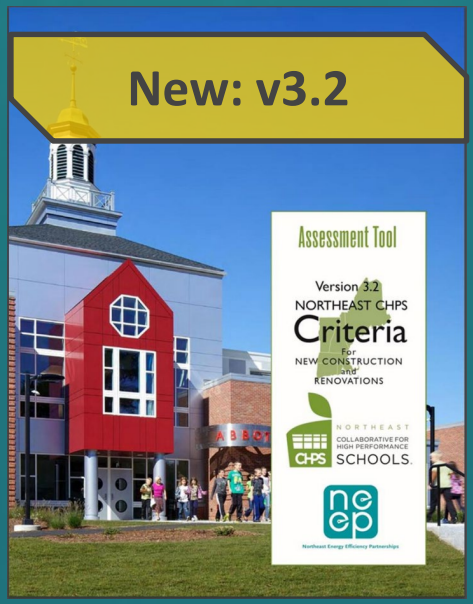
Source: Harvard TH Chan School of Public Health

NE-CHPS

- **NE-CHPS**
  - A **complete building criteria** that provides students with **premium educational environment**s

Prioritizes:

- IEQ
- Energy Efficiency
- Occupant comfort – thermal, acoustical and visual
- Ease of O & M



Why is NE-CHPS Different?

Developed with input from regional stakeholders

Reflects the climate, building codes, and educational priorities of the Northeast

Emphasizes best practices for ongoing building operation and maintenance

Stresses Indoor Environmental Quality and Energy Efficient Design

What's in the Criteria?

The Seven Sections of NE-CHPS	
Category	**Example**
1. Integrated Design Process	Design team consults with occupants (facility manager)
2. Operations and Metrics	Benchmarking, Training, etc.
3. Indoor Environmental Quality	Walk-off mats, Acoustics
4. Energy	Commissioning, Lighting Controls, etc.
5. Water	Low-flow Toilets, Irrigation, etc.
6. Sites	Minimize site disturbance, central location, near public transit, etc.
7. Materials and Waste Management	Locally produced materials, waste diverted from landfills, etc.

Why It Matters

Outcomes

Concord School District

Abbot Downing Elementary

NE – CHPS Verified

Features:

- Visible HVAC, lighting, and structural systems
- Locally sourced materials contain little to no VOCs
- Low flow fixtures reduce potable water usage by 52%

★ ***$50,032***

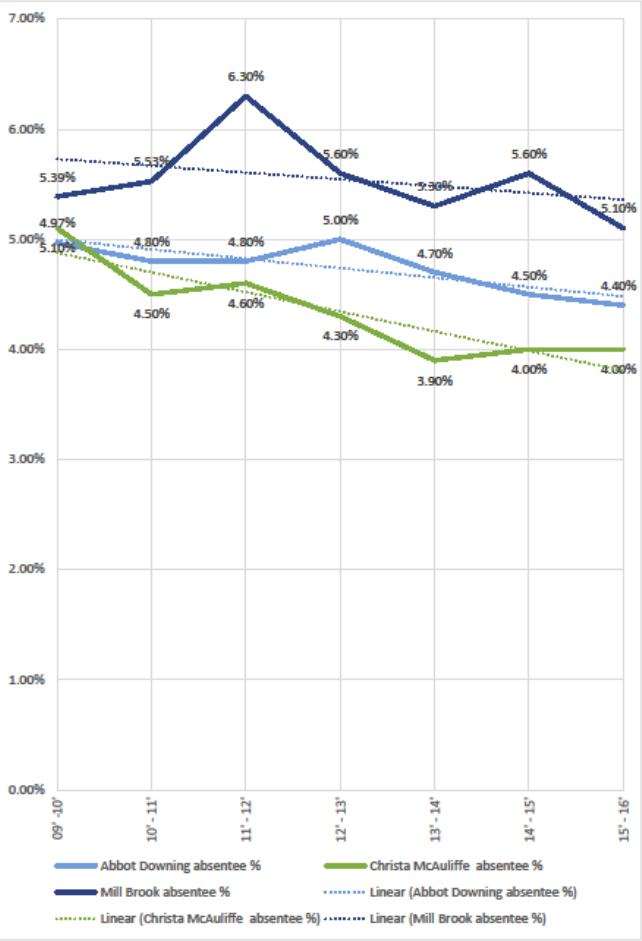
Estimated energy cost savings per year

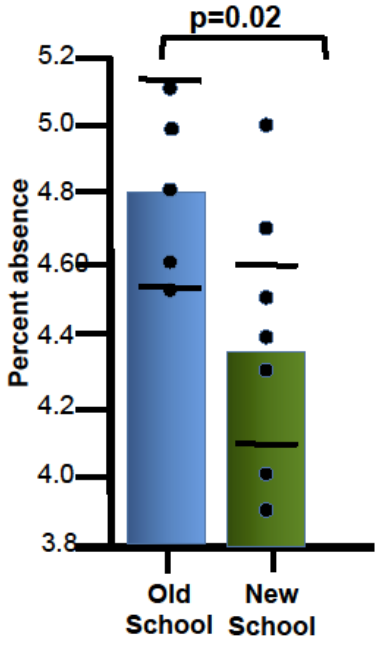
Inside Look at a NH Elementary School

Photo Credit: Ed Wonsek / HMFH Architects

Outcomes

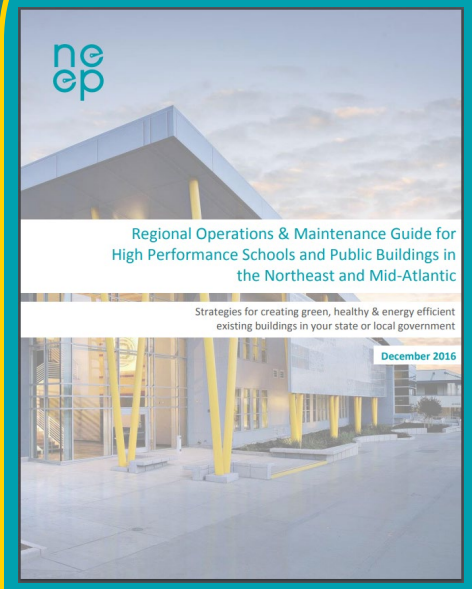
Concord School District





Other Free NEEP Resources

(click an image below to be redirected to the webpage)



Air Source Heat Pumps – Renters Checklist – Home Energy Management Systems NEEP Blog – Strategic Electrification – Building Energy Labeling

Visit us at NEEP.org for these resources and more

Questions or Comments?

Thank You!

Carolyn Sarno Goldthwaite

781-860-9177 x 119

cgoldthwaite@neep.org

John Balfe

781-860-9177 x 109

jbalfe@neep.org