

ISSUE PAPER# 6.3  
SUSTAINABILITY PRINCIPLES OF DESIGN

BACKGROUND

Portland Public Schools (PPS) has worked to incorporate sustainable practices – ones that preserve resources and minimize environmental impact – in its daily operations and into future design plans. PPS is Portland’s second largest property-owner and one of the city’s largest employers. Heeding this, the Portland Public Schools Board of Education attends to the environmental, social and economic future of Portland as it sets policies and practice. These three pillars of sustainability shall be integrated into all facilities decisions.

RELEVANCE FOR FACILITIES PLAN

Upholding these pillars begins by following the logic of the waste hierarchy: reduce, reuse, recycle. PPS practices this in regard to solid waste and materials, as well as towards energy usage through a methodology of: behavior adaptation, efficiency improvements and, finally, energy generation.

Pursuant to the school facility planning statute, ORS 195.110:

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In future capital work, the district shall extend this thinking through the design, construction and operation of high performance buildings and educating building occupants on maximizing the

environmental performance of every PPS building. Whole building systems, the construction process, building materials and furnishings will be designed to conserve environmental and financial resources for the life of building projects. And, as with all district action, social equity interests will play a critical role in the successful implementation of these principles. PPS buildings serve the present and future; as such, all plans should take into account the resources available for at least seven generations<sup>1</sup>.

PPS needs to develop resource savings techniques that are easy to understand and operate. Systems must be simple and easy for teachers/staff/students to understand the resource-saving technique. Without this level of continual training of teachers, staff and students, the facilities team will be forced to address these improvements with either a "hands-on" approach, or remotely via technology. PPS is committed to involving students, families, teachers and community partners in all aspects of the following principles.

## 1. WHOLE SYSTEM DESIGN

### SUPERINSULATED, PASSIVE SCHOOLS

Building designs will consider the integration of all building systems to increase passive building performance.

- a) Integrate passive design elements with active building systems in the design of new or remodeled buildings, to the maximum extent feasible. Starting with optimal building orientation in new construction and well-insulated shells in all major work, buildings shall take advantage of natural ventilation, sunlight, shading and thermal masses to regulate interior temperatures and help maintain comfortable environments year-round. All spaces shall take advantage of daylighting opportunities.
- b) Use low-tech infrastructure that supports high-tech learning environments.
- c) Attain minimum LEED silver certification, or equivalent, for all major renovations; achieve minimum LEED gold certification, or equivalent, for new construction. Use the Living Building Challenge's holistic approach as aspirational guidelines for all design and planning.

## 2. LONGEVITY

### DURABLE, PRACTICAL, HANDSOME MATERIALS

Facilities will be designed to ensure long-term, effective performance.

- a) Specify durable materials and systems that require minimal maintenance, non-toxic upkeep and are sensitive to the earth's limited resources.
- b) Design building layout and building systems to provide flexibility for shifting populations and program needs throughout generations.
- c) Plan walls, load-bearing and otherwise, that consider the potential need for school reconfiguration or expansion in the future.
- d) Establish a culture of understanding and ownership for how users interact and relate with the building.

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<sup>1</sup> Clarkson, Linda, Vern Morrisette, and Gabriel Régallet. "Our Responsibility to the Seventh Generation." , . International Institute for Sustainable Development, 1992. Web. <[http://www.iisd.org/pdf/seventh\\_gen.pdf](http://www.iisd.org/pdf/seventh_gen.pdf)>.





## 8. WATER AND WASTE

## CLEANER WATER TO THE RIVERS

School facilities will incorporate water-conservation and waste-reducing infrastructure.

- a) Identify opportunities to implement greywater reuse systems such as in toilets or for irrigation.
- b) Identify opportunities to manage stormwater on-site including reuse of stormwater as greywater.
- c) Select plants and landscaping that require low-upkeep and no irrigation after establishment.
- d) Install infrastructure that supports the reuse of materials (e.g. dishwashers to support reusable trays).
- e) Furnish buildings with consistent, easy-to-recognize recycling and compost receptacles.

## 9. TRANSPORTATION

## FEWER ENGINES RUNNING

Minimize fossil fuel expenditures for student and staff commutes.

- a) Encourage bicycle and pedestrian travel through grounds layout and building design.
- (a) Site and building design should provide safer, more efficient pick-up and drop-off areas for students to minimize vehicle congestion and idling.
- c) Ensure students and staff have access to covered, well-lit bike parking.

## 10. INFORMATION FEEDBACK

## SMARTER BUILDINGS

Building system performance will be effectively measured, monitored and modified.

- a) Provide access to building performance data and the opportunity for classroom curriculum use