



PREPARE FOR THE NEW ENERGY FUTURE™



AIA+2030 Professional Series Overview + Learning Objectives

Session I: The 2030 Challenge: setting + achieving energy goals with integrated design™

Integrated design is an important element in the creation of next-generation 2030 Challenge compliant buildings. In this session, we will explore the Integrated Design Process (IDP) and Integrated Project Delivery (IPD). We will explore collaborative strategies that can achieve the targets outlined in the 2030 Challenge, and how this process can be used as a roadmap throughout the design process. In particular, we will examine the utility of IDP in defining core, early design decisions such as building form and orientation.

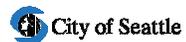
Learning objectives:

Upon completion of this session, attendees will be able to:

- explain how the Integrated Design Process differs from traditional design,
- identify specific characteristics of Integrated Design and its implications building energy performance and,
- summarize the potential benefits gained by employing the Integrated Design Process.

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Session II: Getting to 60: the power of targets + load reduction™

The goal of the 2030 Challenge® is to create buildings that are designed to meet a fossil fuel, greenhouse gas emitting, energy performance standard of 60% less than the regional (or national) average for that building type now, with the standard rising to a 70% reduction in 2015 and incrementally increasing 10% in efficiency every five years until 2030, when the goal of zero emissions is met. One of the more compelling aspects of dramatic energy reductions is the mounting evidence that if done well, such ambitious goals can actually be done with little or no added costs. This session will explore the use of EPA's Target Finder (ENERGY STAR) to establish design targets and metrics, such as Energy Use Intensity (EUI). The session will include multiple examples of projects that have achieved exemplary energy performance, offer approaches for incorporating targets into the design process, and explore how providing targeting and EUI information can be a value-added service for design firms.

Learning objectives

Upon completion of this session, attendees will be able to:

- describe the energy/carbon objectives of the 2030 Challenge,
- use the Energy Star Target Finder tool to set an Energy Use Intensity target for a project and
- summarize the concept of Energy Use Intensity (EUI) and describe why it is an important tool for setting energy targets.

Session III: Accentuate the positive: climate responsive design™

Conventional building design presumes that a building's energy will be imported in the form of electricity and fuel. Integrated design accounts for on-site resources, as well as minimizing unwanted environmental conditions. In this session, we'll explore using climate data and site characteristics to conduct a Site Resource Inventory to inform building design and lower building energy loads. This will set the stage for future sessions that will address specific strategies in more detail.

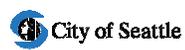
Learning objectives:

Upon completion of this session, attendees will be able to:

- identify building form and orientation strategies,
- implement climate responsive design and identify building energy loads and

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- understand site and climate factors as it relates to building performance.

Session IV: Skins: the importance of the thermal envelope™

The building skin is the critical interface between occupant comfort and outdoor climatic conditions. A high performance building requires a high performance envelope, one that responds to exterior environmental impacts at various times of the year. This session will explore design, material and technology approaches to wall and window assemblies, from straightforward low cost methods to advanced double skinned wall applications. We will also address moisture issues associated with various wall insulation approaches.

Learning objectives:

Upon completion of this session, attendees will be able to:

- identify critical elements of the thermal envelope responsible for building energy consumption,
- specify strategies for minimizing thermal bridging, and
- understand the architectural elements, materials, and construction opportunities for designing a high performance thermal envelope.

Session V: Aggressively passive: employing passive systems for load reduction™

Properly designed, a building captures existing resources such as light, wind, and solar radiation to provide for the comfort and needs of occupants. Passive systems work in concert to allow the building to manage energy demand through design. This session will build on the concepts introduced in Sessions 3 and 4 to flesh out a holistic strategy to designing passive systems.

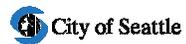
Learning objectives:

Upon completion of this session, attendees will be able to:

- define passive systems and identify specific elements of a passive design,
- appraise the effectiveness of various passive strategies based on a site's available resources and
- determine which of a suite of strategies will be most likely to be successful on a particular site.

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Session VI: Illuminating savings: daylighting and integrated lighting strategies™

Lighting constitutes 29 percent of a typical American office building's energy load. Proper lighting is also critical to occupant comfort and productivity—and an exploration of daylighting and efficient artificial lighting is and of itself an exploration of integrated design. This session will explore the nature of natural light as part of a site's resource inventory, and identify strategies for maximizing access to beneficial light while controlling for glare and unwanted heat gain. It will couple this discussion with the latest research and application of artificial lighting choices designed to meet residual lighting needs.

Learning objectives:

Upon completion of this session, attendees will be able to:

- evaluate various building forms and orientations for optimal daylighting potential,
- compare competing designs to determine the most effective approach to daylighting and
- assess a lighting scheme for its compatibility with an accompanying daylighting design.

Session VII: Right-sized: equipment and controls for super-efficient building system™

After designing for maximum passive use of site resources and mitigating energy loads, the next step to a breakthrough building is properly sized equipment and employment of advanced controls. This session will explore the concept and application of designing and specifying equipment and controls for buildings that are already designed to take care of themselves, and need mechanical intervention only during periods of peak demand. Systems such as hybrid natural-mechanical ventilation systems and other approaches to engineer the mechanical system to be as small (efficient) and effective as possible will be explored.

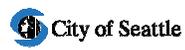
Learning objectives:

Upon completion of this session, attendees will be able to:

- describe and apply right-sizing as it pertains to passive energy conservation strategies,

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- utilize controls to optimizing the efficiency of equipment and
- incorporate energy efficient strategies to maintain occupant comfort.

Session VIII: Site power: renewable energy opportunities™

The ultimate goal of the 2030 Challenge is fossil fuel free buildings by the year 2030. As buildings approach zero for their carbon footprint, on-site renewable energy sources become a key element to the strategy. As the lower up-front cost conservation and efficiency measures are exhausted, renewable energy emerges as the final step to reaching aggressive carbon elimination goals. This session will explore the relationship between conservation and renewable energy, and explore current renewable energy opportunities, both onsite and offsite systems, such as combined heat and power and local district energy (valuable for load sharing).

Learning objectives:

Upon completion of this session, attendees will be able to:

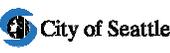
- describe the technology behind major on-site renewable energy strategies for buildings,
- propose an appropriate renewable energy strategy based on site characteristics and resources,
- enumerate the life cycle costs and benefits of on-site renewable energy and,
- understand how district energy can provide thermal and electric services and balance neighborhood loads.

Session IX: The hand-off + staying in shape: operations, maintenance + education™

Design intent is important, but at the end of the day, how the building actually performs is really what matters. The closer the match between predicted and observed performance, the more likely a client will be happy. This session will explore the tools available to an architect to help match performance with expectations, including building commissioning, maintenance staff and occupant training, and building performance monitoring. Using building performance data to validate and improve on design and construction decisions will also be explored—providing a strong tool for iterative learning and innovation.

Learning objectives:

Upon completion of this session, attendees will be able to:

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- explain the benefits of monitoring, evaluation, and education to design firms, clients, and building occupants,
- explain and advocate for commissioning on projects and
- instruct building maintenance and operations staff on optimizing building performance.

Session X: Putting it all together: achieving 2030 goals on the project and at the office™

Success with advanced energy performance projects requires not only a detailed understanding of the individual strategies involved, but also a strategic understanding of the architect's role in the design and construction process and how to orchestrate an already dauntingly complex process. This session revisits the integrated design and target creating process, and then looks outward to contextualize the architect in the larger environment of the project and—equally important—the firm. Key to the success of the 2030 Challenge is movement from learning to action. This session will examine the movement from in-class exercise to on-site implementation. Additionally, the session will provide tools for helping your firm institutionalize the creation of high-performance buildings and becoming a change agent within your community.

Learning objectives:

Upon completion of this session, attendees will be able to:

- set energy performance targets early to inform design objectives,
- justify the inclusion of integrated energy efficiency strategies in projects and
- teach other design professionals in their firm and community about advanced energy efficiency strategies for buildings.

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