

GREEN GAUGES

Green Gauges is a guided process developed by Williams College to communicate fundamental information about a project’s green building characteristics. This process is employed in addition to—and interwoven with—the standard practice of architectural design and documentation.

The first part of Green Gauges allows the Design Team and Owner to evaluate various options early in the design phase, and make informed decisions as they relate to the Owner’s cost and sustainability objectives. The next part of the process tracks the results of the built systems, to see whether the building is performing as intended.

Six contractual deliverables are required during design and construction. Each deliverable communicates specific information from the Design Team to the Owner about the fundamental building strategies being developed, and how those strategies impact cost, energy and operational carbon. The review of the deliverable by the Design Team and Owner provides the opportunity to evaluate key information, make decisions, and attain approval for the project’s next steps.

The goal of Green Gauges is to help institutions clearly understand the measurable effectiveness of sustainable building strategies.

The information generated by the process shows what particular systems and approaches are being considered to achieve a sustainable building, and answers the basic questions:

“What does it cost?”
and
“What does it save?”

DELIVERABLE	WHEN DUE
1: ESTABLISH PROJECT GOALS FOR ENERGY USE	10% SCHEMATIC
2: SYSTEMS AND METERING NARRATIVE	30% SCHEMATIC
3: VALUE ASSESSMENT	25% DESIGN DEVELOPMENT
4: METERING DIAGRAM	50% DESIGN DEVELOPMENT
5: OCCUPANCY MONITORING NARRATIVE	CONSTRUCTION COMPLETION
6: VERIFICATION	11 & 18 MONTHS POST-OCCUPANCY

ESTABLISH PROJECT GOALS FOR ENERGY USE

DELIVERABLE 1

WHEN Occurs at 10% of Schematic Design

WHAT Define target Energy Use Intensity (EUI) for the building, and compare with similar building types to consider the feasibility of carbon reduction potential.

(See attached example)

WHY To make sure that the energy goals are appropriate to the building type (ie science lab versus dormitory) and that they are achievable.

SYSTEMS AND METERING NARRATIVE

DELIVERABLE 2

WHEN Occurs at 30% of Schematic Design

WHAT Provide clear, simple written descriptions of:

A) The proposed conceptual systems being considered for:

Site, envelope, active systems (MEP), passive systems, indoor air quality, resilient design, water, generation/off-sets, occupancy, monitoring, construction

B) The strategy for installing meters and collecting data.

Narrative will be reviewed by: Users, Operations, Commissioning Agents, and Contractor. Owner will then review and comment on each description, providing modification or approval of each strategy and/or system prior to the completion of Schematic Design.

(See attached example & template)

WHY To get early feedback from various stakeholders (Owners, Operations, Maintenance Staff) about the functionality, cost effectiveness, and carbon reduction of the strategies being proposed by the Design Team.

VALUE ASSESSMENT

DELIVERABLE 3

WHEN Occurs at 25% of Design Development

WHAT Identify primary building strategies to reduce energy and carbon use, and quantify how much these strategies cost & how much energy they save.

Together with the Owner, identify discrete design elements from the above strategies to be compared in terms of cost by the Design Team's cost estimator.

(See attached example & template)

WHY Provide clear summary of how much each option saves versus how much it costs, so that the Owner can decide where to spend their money to get the greatest energy return on their investment.

DELIVERABLE 4

METERING DIAGRAM

WHEN Occurs at 50% of Design Development

WHAT Provide a comprehensive diagram showing how each system will be metered and monitored for consumption data.

This diagram will form the basis of a submittal from the contractor during construction.

(See attached example)

WHY Rather than provide isolated diagrams showing electric meters in one location, water meters in another, and controls only described in the specifications, this single document allows the Design Team to show all metering in one place and for the Owner to review and modify as needed.

DELIVERABLE 5

OCCUPANCY MONITORING NARRATIVE

WHEN At completion of construction/start of building occupancy

WHAT Provide a concise document describing what is important to monitor in the building to ensure the projected savings are realized.

Projected energy consumption and production should be updated based upon changes made to the project during design or construction. Itemize each type of fuel, and then calculate the final predicted EUI for the building.

WHY To extract key information from the wisdom that the team has gained during design and construction, and pass it on to the operations and maintenance staff—so that they know how to best take care of the building, and what particular issues to be aware of to make sure it functions well.

DELIVERABLE 6

VERIFICATION

WHEN 11 & 18 months after building occupancy

WHAT Design Team reviews Owner-provided energy consumption for the building, then prepares an evaluation of this actual energy consumption (by fuel type) and production compared to the predictions made at the completion of construction.

WHY To identify issues of under performance and/or dysfunction in building systems and then resolve them.