P100 Training 2021
The Facilities Standards for the Public Buildings Service
General Requirements
Lance Davis
Sustainable Architect
P100 Program Manager

Natalie Huber
Chief Engineer
Table of Contents

01 P100 Process
   How is the P100 edited

02 Application
   Who uses P100 and why

03 Law/Codes
   How are the rules incorporated

04 Guides
   Integrating building specific guides

05 Safety
   How to make our projects safe

06 General
   A grab bag of requirements
P100 Process

How is the P100 edited?
**P100 Update History**

**P100 Changed to Performance Based Requirements**
- Previous versions were predominantly prescriptive

**2014**
- **Annual P100 Updates**
  - Clarified requirements
  - Included new Legislative and Executive requirements

**2015, 2016, 2017**

**2018**
- **P100 Update**
  - Significant update
  - Reduced the document by 30 pages (10%)  

**2019**
- **P100 Addendum**
  - Full update not required, addendum was published
  - Incorporated P100 Cost Study savings, reducing costs by 14%

**2020**
- **Appendix Review**
  - Developing deliverable requirements for four delivery methods

**2021**
- **P100 Update and New Deliverables**
  - Redesigned
  - User friendly deliverable matrix

**Future P100 Updates**
- 3 year cycle
- Addendums as needed
**P100 Annual Revision and Publication Process**

- **Submit Changes**: August 1
  - Complete P100 Change Request Form to P100 Program Manager
  - 2 months

- **Technical and Steering Committee Review, Approve Changes**: October 1
  - Technical Committees Review, Recommend and Forward to Steering Committee for Approval
  - P100 Program Manager Facilitates

- **Stakeholder, Business Line, Region Review**: January 1
  - P100 Program Manager Facilitates
  - Substantial Changes are Re-routed to Technical and Steering Committees for Review and Approval

- **Issuance**: March 1
  - Legal and Leadership review the changes, approve, and issue the P100
  - 2 months

- **Legal and Leadership**
  - April 30
What is in the latest version
Sustainability

- Clarified the role of the commissioning agent to ensure that Total Building Commissioning is executed correctly
- Updated the Waste Net 0 requirements to address collection and ventilation
- Updated the energy use targets to include the GSA Energy Use Target Guidance
- Updated the requirements for the Guiding Principles Optimize Energy to require the most stringent option
- Major overhaul of the Landscape performance requirements to better address sustainability
- Updated requirements in the enclosure performance tables to better address sustainability
- Updated the use of the P100 performance matrix to ensure project managers are utilizing P100 requirements and achieving sustainable performance

Building Enclosures

- Updated requirements for enclosure air tightness of all six sides of a building
- Updated requirements for enclosure thermal performance to better address thermal breaks and dew point
- Updated building enclosure commissioning to better address commissioning agent requirements and new standards

Workplace and Interiors

- Updated the acoustic performance of spaces to the latest information in the IGCC (International Green Construction Code)
- Updated many interior material choices to new sustainable standards and the IGCC
- Updated and clarified requirements for workplace performance

Mechanical, Electrical and Plumbing (MEP)

- Updated plumbing performance requirements to the IGCC
- Updated lighting performance requirements to better address the quality of light, circadian rhythm, controls and efficiency
- Updated EV requirements to address accessibility
<table>
<thead>
<tr>
<th>Executive Orders</th>
<th>Energy Act of 2020 rebates</th>
<th>Energy Act of 2020 electrical updates</th>
</tr>
</thead>
<tbody>
<tr>
<td>on sustainability and climate including EO14008 and 13990</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
NEW SECTIONS

- **Covid and IAQ**
  Improve safety and maintenance

- **Civil Design**
  Focused on flooding and geologic hazards

- **Key Sustainable Products**
  Better address purchasing and carbon

- **Building Decarbonization**
  Introduced carbon and its reduction

- **Green Roofs**
  Updated requirements per IG audit

- **Energy Models**
  Expanded use of early modeling

- **Bird Safe Design**
  New industry standard

- **Designing for Daylight**
  All requirements in one place

- **Operational Excellence**
  Require the use of operational design guide

- **Resiliency**
  Better planning for events
CHAPTER 1 - GENERAL REQUIREMENTS

The A/E must specify that operation and maintenance manuals be provided in electronic format (MP4 files) with training videos for the startup and maintenance of all major equipment. Training videos must include the detailed instruction of all operational and maintenance aspects of any new building Automation System software. See the GSA Commissioning Guide for additional information.

At the conclusion of design, the A/E must provide an electronic document describing the design intent for all building systems. These instructions must be developed during the design phase and incorporated into the comprehensive training for operations and maintenance personnel.

1.9 SUSTAINABILITY

Sustainability is the conditions under which humans and nature can exist in productive harmony, and that permit fulfilling the social, economic, and other requirements of present and future generations. Sustainable design seeks to ensure that future generations are not disadvantaged by the depletion of natural or renewable resources by the current generation.

1.9.1 SUSTAINABLE PERFORMANCE TABLE

<table>
<thead>
<tr>
<th>Energy Item</th>
<th>Energy Net Zero</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>Designs must be Energy Net Zero ready on a source energy basis with onsite renewables that are designated on the plan for future installation including pathways, conduits, or other means of getting the power to the building</td>
</tr>
<tr>
<td>Tier 1</td>
<td>Match Energy Net Zero ready with 25% onsite renewables installed and the remainder designated on the plan for future installation. If a minimum, comply with gG-33C-2018 Section 701.4.1.1.1 (7.4.6.1) On-Site Renewable Energy systems, however, exception 2 shall not apply.</td>
</tr>
<tr>
<td>Tier 2</td>
<td>Tier 1 + 50% onsite renewables installed.</td>
</tr>
<tr>
<td>Tier 3</td>
<td>Tier 2 + 100% renewables installed.</td>
</tr>
<tr>
<td>M &amp; V</td>
<td>Report the projects ongoing energy performance in a sustainability benchmarking platform</td>
</tr>
<tr>
<td>Plans &amp; Specs</td>
<td>Provide the project's plan for ongoing energy performance in a sustainability benchmarking platform</td>
</tr>
<tr>
<td>Calculations &amp; Analysis</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Water Item</th>
<th>Water Net Zero</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>Meet current code (including BCA CPC, HP)</td>
</tr>
<tr>
<td>Tier 1</td>
<td>Designs must be Water Net Zero ready with 50% potable water returned to the original water source on site.</td>
</tr>
<tr>
<td>Tier 2</td>
<td>Designs must be Water Net Zero ready with 10% potable water returned to the original water source on site.</td>
</tr>
<tr>
<td>Tier 3</td>
<td>Comply with gG-33C-2018 Chapter 6, Water Use Efficiency. In addition, all sites shall comply with Section 551.4.3.1 (5.3.1.1) Projects on Greenfields.</td>
</tr>
<tr>
<td>M &amp; V</td>
<td>Report the project's ongoing water performance in a sustainability benchmarking platform</td>
</tr>
<tr>
<td>Plans &amp; Specs</td>
<td>Provide calculations for water use baseline. Show all methods of water conservation, reuse, and the amount of water returned to the original water source.</td>
</tr>
<tr>
<td>Calculations &amp; Analysis</td>
<td>1</td>
</tr>
</tbody>
</table>
P100 SUBMITTAL MATRIX

New user friendly matrix that shows the deliverables for each delivery type and phase.

P100 and submittal matrix can be found at www.gsa.gov/p100
02 Application

Who uses P100 and why?
P100 is Mandatory

Not a guide, textbook, handbook, manual, nor a substitute for technical competence
### WHAT GSA PROJECTS USE P100?

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA51</td>
<td>New Construction</td>
<td>YES</td>
</tr>
<tr>
<td>BA54</td>
<td>Minor Repair and Alteration</td>
<td>YES</td>
</tr>
<tr>
<td>BA55</td>
<td>Major Repair and Alteration</td>
<td>YES</td>
</tr>
<tr>
<td>BA61</td>
<td>Building Operations</td>
<td>YES</td>
</tr>
<tr>
<td>BA64</td>
<td>Historic Preservation</td>
<td>YES</td>
</tr>
<tr>
<td>BA80</td>
<td>Reimbursable Work Authorization</td>
<td>YES</td>
</tr>
<tr>
<td>ESPC</td>
<td>Privately financed projects such as an Energy Savings Performance Contract</td>
<td>YES</td>
</tr>
<tr>
<td><strong>Lease Construction</strong></td>
<td>Facilities that the Government Intends to Own or has an Option to Purchase</td>
<td>DEPENDS</td>
</tr>
<tr>
<td><strong>Leases</strong></td>
<td>Leases</td>
<td>NO</td>
</tr>
</tbody>
</table>
Design Excellence

P100 requires prospectus level projects to use Design Excellence Policy and Procedures
How do I use P100 for a renovation, small project, or limited scope?

P100 applies to the new work. “If you touch it, it must meet P100”

Review the codes to determine if the entire building or system must be brought into compliance.
Waiver

Written request signed by the Regional D&C Director and approved by the Office of Design and Construction.

Each waiver can take up to 15 working days to approve. Must be submitted BEFORE concept submission.
1.2.4 Deviations from P100

Alternative and Equivalent Compliance Used for Fire Protection.

Metric Waiver
See GSA Metric Order, GSA Metric Program, for guidance

Modification of ABAAS Architectural Barriers Act Accessibility Standard changes must be approved by the PBS Commissioner
03 Laws/Codes

How are the rules incorporated?
Comply with a nationally recognized model building code.

Comply with Federal environmental laws. GSA policy is voluntary compliance for State and local laws.

The Architectural Barriers Act Accessibility Standard is mandatory.

Pursue rebates and incentive programs at the Federal, State and local level.

Comply with OSHA, anticipating operations, maintenance, and occupants.
Facility Definitions

**Essential Facility**
International Building Code defines as any building that is intended to stay operational during/after an event.

**Critical Action Facility**
DHS defines as a facility that even a slight chance of flooding is too great. All new courthouses are critical action.

**Mission Critical Facility**
Defined as electrical supply interruption will cause negative impact and is designated by tenant.
GSA uses the codes of the International Code Council (ICC) and the NFPA Life Safety and National Electric Codes

- Use the latest code at time of solicitation
- GSA requirements take precedence over codes. Try to use equivalency clauses
- Use the Wildland Urban Interface to determine wildfire risk
Interagency Security Committee Risk Management Process

ISC defines the criteria used by a facilities security committee to determine its security level.

- Do a facility security assessment
- Determine countermeasures
- Included security countermeasures table as a fyi for consideration

Determination of the security level must be done early and incorporated into the program of requirements.
ASHRAE 90.1

Energy Conservation and Production Act requires DOE to publish a rule on Standard 90.1. Published in 10 CFR, Parts 433-435.

- Currently lists the 2013 version
- Check for latest version at time of project solicitation
State and Local Codes

Federal Facilities are exempt. GSA plays nice, but has final say.

- PM’s must give an opportunity for local officials to review a project, especially first responders
- GSA and our contractors do not pay code review fees
- Exception to the above is for systems that impact off site terrain or infrastructure
  - Fire protection
  - Storm water runoff
  - Erosion control
  - Roads and bridges
  - Water and gas
- Construction inspections are allowed, however they are only to assist GSA in achieving code compliance
04 Guides

Integrating building specific guides.
Program Specific Guides

Many building types and customers have guides or standards.

- Federal Courthouses
- Land Ports of Entry
- Child Care Centers
- Security
- Historic Preservation
- First Impressions
- etc…
Conflicts

If there is a conflict between P100 and a program specific guide, the more stringent requirement rules. Contact ODC if requirements oppose each other.
Operational Excellence

- Minimize Negative Impacts
- Consider building Spaces
- Service Contract Performance
- Reduce Periodic Maintenance
- Consult Property Management
- Training After Commissioning

Use of the Design Guide for Operational Excellence is required.
05

Safety

How to make our projects safe.
The codes provide an adequate standard for safety and health. GSA requires a systems approach to eliminate facility life-cycle risks.
Order of Precedence

1. Eliminate Hazard
2. Isolate Hazard
3. Provide Warning
4. Procedures and Training
Asbestos

Remove ACM if:

- Potential for future disturbance
- No longer safely managed through:
  - Repair
  - Maintenance
  - Enclosure
  - Encapsulation
Lead

Test paint for lead content for buildings constructed prior to 1978.
General

A grab bag of requirements.
Moved the Construction Sign and added options

Renovations can choose a 4’x8’ or the 6’x12’ shown
Space Measurement

Follow GSA’s National Business Space Assignment Policy

- Explains ANSI and BOMA methods
- Explains exceptions to ANSI and BOMA
- Targets usable to gross of 80% in new construction
New and major R&A require a BIM model deliverable.
Must contain maintenance management data in COBie.
Utilize the GSA Bim Guide.
Total Building Commissioning

Verification and documentation that the facility performs per the design and expectations.

- Required for all capital construction

- Utilize the GSA Building Commissioning Guide
Building Operations and Maintenance

Worker Access
- Design components for worker access per Mil-Std.

Removal/Replacement
- Design components for removal and replacement

Verification
- Utilize BIM clash modeling to verify worker access and equipment removal/replacement.

Turnover
- A/E team provides design intent
- Contractor provides training videos
Thanks!

Do you have any questions?

lance.davis@gsa.gov