Amendment I

Email: lsilber@watereuse.org

Name: Lydia Silber

Employer or who you represent with this change: WateReuse Association

Provide the chapter, section number, or type NEW or THROUGHOUT: We recommend adding introductory text to provide background context on water recycling. This could be included as part of a summary of the updates that GSA will have made to the manual, or perhaps as part of an expanded introduction to the manual.

Existing Text copied from P100: N/A

Proposed New Text:

Water reuse, also known as water recycling, is mentioned throughout this manual and is defined as the process of intentionally capturing wastewater, stormwater, or graywater and cleaning it as needed for a designated beneficial purpose such as drinking, cooling, toilet flushing, and irrigation. Recycled water may be produced onsite at federal facilities or by water or wastewater utilities. In many locations across the country, facilities, campuses, and developments are already using onsite water recycling to produce water for various non-potable uses. Similarly, there are successful examples of federal facilities sourcing municipally produced recycled water for cooling, landscape irrigation, and other purposes. Water reuse, like water conservation and efficiency, can help the Federal Government meet its sustainability objectives.

Proposed Idea (If you have a general idea you would like considered, you may enter it here. (Ex. Eliminate the use of forced/slave labor for materials.) This requires more time for the review committees and may not be fully considered. Providing exact proposed text is the best way for full consideration.): N/A

Provide information about the background or justification for this change: The proposed text provides context for additional changes that the WateReuse Association is proposing throughout the P100 manual.

Provide information on the impact of life cycle cost. (Provide information about the life of the change including initial cost, operation and maintenance cost, replacement cost, and energy cost.): Overuse or inconsistent availability of groundwater or surface water can threaten water supply reliability and force both municipalities and water users to turn to alternative water supply options. The cost of municipally produced recycled water is often cheaper than other types of water, particularly in drought-prone areas. In southern California, for example, the price for imported raw water in 2019 was $820 per acre-foot compared to $65 for tertiary recycled water. Elsewhere in the country, water recycling has been used as a tool to stabilize both supplies and prices for customers. One community in Pennsylvania recycles approximately 3 million gallons per day (MGD) of water to ensure a sustainable supply, reducing the burden on the local watershed and groundwater sources, and decreasing negative thermal impacts on aquatic life. Implementing this program has helped stabilize rates—for the 22 years of the program, rates have increased by 2.7% annually, on par with the average inflation rate. Well planned and designed investments in water reuse can help ensure

reliable supplies and stabilize prices for the long-term. Returns on Investments from installing onsite water recycling systems and offsetting water and sewer rates are highly dependent on the area that you are working in and the cost of conventional water and sewer services. For example, the annual net operating savings of onsite water reuse for a generic project, located in the City of Boston with an onsite water reuse facility is approximately $297,000. This generic example is assumed to consume 100,000 gpd of potable and non-potable water, of which 60,000 gpd is used for heating, cooling, and toilet flushing is calculated below. The initial capital investment in this Boston Metro Area case history project is estimated to be $1,100,000. Taking annual net savings into account the payback period is approximately 5.5 years. Similarly, the annual net operating savings of an existing onsite water reuse system in New York City is approximately $360,000. With an initial capital investment of $1,900,000, the payback period for this project was roughly 3 1/2 years.

Impact on project cost. (Provide information about the first cost. Is the change more than, equal, or less cost compared to what is currently in P100?): N/A

Impact on risk. (Describe how the change may add or reduce risk.): Water reuse is a risk mitigation and climate resiliency tool. In areas facing or anticipating water supply constraints, water recycling creates a stable, locally controlled supply, mitigating the impacts of drought and other threats to groundwater and surface waters. Western communities and water users have a long history of using water recycling to combat drought, for example. In water-rich areas, where overburdened centralized systems have been temporarily forced offline by flooding and other extreme weather events, onsite water recycling systems have allowed residential and commercial developments to produce their own clean water. During Super Storm Sandy, for example, when lower Manhattan and the surrounding region experienced severe flooding that disrupted power and sewer service to neighborhoods and towns, the Solaire residential development in New York City used its onsite recycling system to provide continuous service to its residents.

Are there multiple American vendors?: Yes, municipally produced recycled water can be sourced from any utility that produces recycled water. There are multiple companies in the United States that manufacture, install, and operate onsite water recycling systems.

Synopsis of research, web links, or other data provided to support the change:
https://watereuse.org/
https://watereuse.org/educate/national-blue-ribbon-commission-for-onsite-non-potable-water-systems/

Amendment II

Email: lsilber@watereuse.org

Name: Lydia Silber

Employer or who you represent with this change: WateReuse Association

Provide the chapter, section number, or type NEW or THROUGHOUT: 1.5 State and Local Codes

Existing Text copied from P100: Facilities built on federal property are exempt from state and local building codes. GSA recognizes that the national building codes are typically the foundation of state and local building codes, and that state and local codes represent important regional interests and conditions. In keeping with federal law (incl. the Public Buildings Amendments of 1988 and the Federal Urban Land Use Act of 1949), it is GSA's policy to comply with state and local building codes to the maximum extent practicable; however, GSA has the final authority to accept or reject any recommendation from state and/or local government officials.

Proposed New Text: N/A

Proposed Idea (If you have a general idea you would like considered, you may enter it here. (Ex. Eliminate the use of forced/slave labor for materials.) This requires more time for the review committees and may not be fully considered. Providing exact proposed text is the best way for full consideration.): N/A

Provide information about the background or justification for this change: We are proposing a reference for those who may be looking for information on state codes and standards related to onsite water recycling systems.

Provide information on the impact of life cycle cost. (Provide information about the life of the change including initial cost, operation and maintenance cost, replacement cost, and energy cost.): N/A

Impact on project cost. (Provide information about the first cost. Is the change more than, equal, or less cost compared to what is currently in P100?): N/A

Impact on risk. (Describe how the change may add or reduce risk.): N/A

Are there multiple American vendors?: N/A

Synopsis of research, web links, or other data provided to support the change: The following link is for a searchable database, known as the REUSExplorer Tool, which is operated by the U.S. Environmental Protection Agency (EPA). Users can search for state codes and standards for onsite water recycling systems: https://www.epa.gov/waterreuse/regulations-and-end-use-specifications-explorer-reusexplorer

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Amendment III

Email: lsilber@watereuse.org

Name: Lydia Silber

Employer or who you represent with this change: WateReuse Association

Provide the chapter, section number, or type NEW or THROUGHOUT: 1.9.1 Sustainable Performance Table; Water: Water Net-Zero, Tiers 1- 3

Existing Text copied from P100:

Baseline: Meet current policy including EISA sec. 438.

Tier 1: Designs must be Water Net-Zero ready with 50% potable water returned to the original water source on site.

Tier 2: Designs must be Water Net-Zero ready with 75% potable water returned to the original water source on site.

Tier 3: Comply with IgCC-2018 Chapter 6, Water Use Efficiency. In addition, all sites shall comply with Section 501.3.4.1 (5.3.4.1) Projects on Greenfields.

M & V: Report the project's ongoing water performance in a sustainability benchmarking platform

Plans & Specs: Y

Calculations & Analysis: Provide calculations for water-use baseline. Show all methods of water conservation, reuse, and the amount of water returned to the original water source.

References:

Basis of Design: Provide written narrative showing how water baseline is offset by proposed and installed water saving or reuse measures.

Construction Verification: NA

Proposed New Text: Modify Tiers 1-3 to read as follows:

“Tier 1: Designs must be Water Net-Zero ready with 50% potable water returned to the original water source on site in accordance with model, consensus-based construction codes and standards that address water reuse . Recycled water, either sourced from a municipal entity or produced onsite, may be used to meet these requirements.”

“Tier 2: Designs must be Water Net-Zero ready with 75% potable water returned to the original water source on site in accordance with model, consensus-based construction codes and standards that address water reuse . Recycled water, either sourced from a municipal entity or produced onsite, may be used to meet these requirements.”

“Tier 3: Comply with the latest edition of the IgCC Chapter 6, Water Use Efficiency. In addition, all sites shall comply with Section 501.3.4.1 (5.3.4.1) Projects on Greenfields. Recycled water, either sourced from a municipal entity or produced onsite, may be used to meet these requirements.”

Proposed Idea (If you have a general idea you would like considered, you may enter it here. (Ex. Eliminate the use of forced/slave labor for materials.) This requires more time for the review committees and may not be fully considered. Providing exact proposed text is the best way for full consideration.):

It is not clear to us what is meant by “[…] returned to the original water source on site” in the Sustainable Performance Table. Unless the water is being produced on site, as is the case with onsite water recycling, the original water source will be *off* site. We recommend the use of clearer language here.

Provide information about the background or justification for this change:

There are multiple ways to meet sustainable performance objectives. One mechanism is to reduce potable water consumption through conservation. Another mechanism is to use recycled water in lieu of using treated groundwater or surface water. Many buildings and facilities across the country are already doing this for the purposes of toilet flushing, cooling tower makeup, and landscape irrigation. The Sustainable Performance Table, and the P100 manual more broadly, should take a more wholistic approach to meeting water sustainability objectives by including both conservation and water reuse.

Provide information on the impact of life cycle cost. (Provide information about the life of the change including initial cost, operation and maintenance cost, replacement cost, and energy cost.):

Overuse or inconsistent availability of groundwater or surface water can threaten water supply reliability and force both municipalities and water users to turn to alternative water supply options. The cost of municipally produced recycled water is often cheaper than other types of water, particularly in drought-prone areas. In southern California, for example, the price for imported raw water in 2019 was $820 per acre-foot compared to $65 for tertiary recycled water. Elsewhere in the country, water recycling has been used as a tool to stabilize both supplies and prices for customers. One community in Pennsylvania recycles approximately 3 million gallons per day (MGD) of water to ensure a sustainable supply, reducing the burden on the local watershed and groundwater sources, and decreasing negative thermal impacts on aquatic life. Implementing this program has helped stabilize rates—for the 22 years of the program, rates have increased by 2.7% annually, on par with the average inflation rate. Well planned and designed investments in water reuse can help ensure reliable supplies and stabilize prices for the long-term. Returns on Investments (ROI) from installing onsite water recycling systems and offsetting water and sewer rates are highly dependent on the area that you are working in and the cost of conventional water and sewer services. For example, the annual net operating savings of onsite water reuse for a generic project, located in the City of Boston with an onsite water reuse facility is approximately $297,000. This generic example is assumed to consume 100,000 gpd of potable and non-potable water, of which 60,000 gpd is used for heating, cooling, and toilet flushing is calculated below. The initial capital investment in this Boston Metro Area case history project is estimated to be $1,100,000. Taking annual net savings into account the payback period is approximately 5.5 years. Similarly, the annual net operating savings of an existing onsite water reuse system in New York City is approximately $360,000. With an initial capital investment of $1,900,000, the payback period for this project was roughly 3 1/2 years.

Impact on project cost. (Provide information about the first cost. Is the change more than, equal, or less cost compared to what is currently in P100?): N/A

Impact on risk. (Describe how the change may add or reduce risk.): Water reuse is a risk mitigation and climate resiliency tool. In areas facing or anticipating water supply constraints, water recycling creates a stable, locally controlled supply, mitigating the impacts of drought and other threats to groundwater and surface waters. Western communities and water users have a long history of using water recycling to combat drought, for example. In more water rich areas, where overburdened centralized systems have been temporarily forced offline by flooding and other extreme weather events, onsite water recycling systems have allowed residential and commercial developments to produce their own clean water.

Are there multiple American vendors?: Yes, municipally produced recycled water can be sourced from any utility that produces recycled water. There are multiple companies in the United States that manufacture, install, and operate onsite water recycling systems.

Synopsis of research, web links, or other data provided to support the change:
https://watereuse.org/
https://watereuse.org/educate/national-blue-ribbon-commission-for-onsite-non-potable-water-systems/

Amendment IV

Email: lsilber@watereuse.org

Name: Lydia Silber

Employer or who you represent with this change: WateReuse Association

Provide the chapter, section number, or type NEW or THROUGHOUT: 1.9.4 Life-Cycle Costing

Existing Text copied from P100:

"Federal facilities must be designed to achieve the lowest life-cycle cost. A project's design must comprehensively define reasonable scope and performance requirements within the appropriated budget and approved prospectus for design and construction. Consistent with these constraints, building systems and features must be analyzed and selected to achieve lowest life-cycle cost per the requirements of the P120.

Life-cycle costing (LCC) must be used when selecting a system from several alternative systems or components for a project. LCC is the economic analysis method required by 10 CFR 436, Subpart A, "Methodology and Procedures for Life Cycle Cost Analyses." OMB requires this methodology, through the Federal Energy Management Program, to evaluate the cost effectiveness of systems that use energy and water. LCC compares initial investment options and operating and salvage costs over the life of the equipment and identifies the least costly alternatives. Examples of building systems that affect energy use are the building thermal envelope, passive solar features, fenestration, HVAC, domestic hot water, building automation, and lighting.

Many established guidelines and computer-based tools that effectively support present-value LCC analyses are available. The National Institute of Standards and Technology (NIST) has prepared the Life Cycle Costing Manual for the Federal Energy Management Program (NIST Handbook 135) and annually issues real growth energy price indices and discount factors for life cycle cost analysis. As a companion product, NIST has also established the Building Life Cycle Cost (BLCC) computer program to perform LCC analyses. The latest versions of the BLCC program not only structure the analysis but also include current energy price indices and discount factor references. These NIST materials define all required LCC methodologies used in GSA design applications. The A/E may obtain the NIST BLCC software and updates.

The project team must integrate the LCC analysis into the concept design process, and the analysis must be completed by the design development phase."

Proposed New Text: Modify existing text as follows (proposed addition in italics for clarity): "Examples of building systems that affect energy use are the building thermal envelope, passive solar features, fenestration, HVAC, domestic hot water, *onsite water recycling and reuse*, building automation, and lighting."

Proposed Idea (If you have a general idea you would like considered, you may enter it here. (Ex. Eliminate the use of forced/slave labor for materials.) This requires more time for the review committees and may not be fully considered. Providing exact proposed text is the best way for full consideration.):

Where the BLCC is mentioned, it may be useful to include water price indices (in addition to the energy price indices) to compare the price of alternative water sources, including traditional sources as well as recycled water. This could be integrated into the preexisting BLCC program, and would also be useful for energy-water nexus applications, in which case water and energy prices are intertwined and would have to be jointly considered. This would be most prevalent in processes like heating and cooling and pumping water.

Provide information about the background or justification for this change: Onsite water recycling systems can and have been used for heat generation, capture and distribution, as well as for energy-use reduction. New York City's Solaire development, for example, has incorporated onsite water reuse, recycling 165,000 gallons of wastewater and stormwater per day and using it for flushing, building cooling, sidewalk maintenance, and landscape irrigation. Compared to similar residential developments in New York City, the Solaire consistently achieves a 48% reduction in water consumption, a 56% reduction in wastewater discharge, a 35% reduction in energy consumption, and a 65% reduction in peak demand for electricity. Moreover, a thermal energy recovery system has been installed to achieve net zero energy water reuse.

Provide information on the impact of life cycle cost. (Provide information about the life of the change including initial cost, operation and maintenance cost, replacement cost, and energy cost.):

Impact on project cost. (Provide information about the first cost. Is the change more than, equal, or less cost compared to what is currently in P100?):

Impact on risk. (Describe how the change may add or reduce risk.): Water reuse is a risk mitigation and climate resiliency tool. In areas facing or anticipating water supply constraints, water recycling creates a stable, locally controlled supply, mitigating the impacts of drought and other threats to groundwater and surface waters. Western communities and water users have a long history of using water recycling to combat drought, for example. In water-rich areas, where overburdened centralized systems have been temporarily forced offline by flooding and other extreme weather events, onsite water recycling systems have allowed residential and commercial developments to produce their own clean water. During Super Storm Sandy, for example, when lower Manhattan and the surrounding region experienced severe flooding that disrupted power and sewer service to neighborhoods and towns, the Solaire residential

development in New York City used its onsite recycling system to provide continuous service to its residents.

Are there multiple American vendors?: Yes, municipally produced recycled water can be sourced from any utility that produces recycled water. There are multiple companies in the United States that manufacture, install, and operate onsite water recycling systems.

Synopsis of research, web links, or other data provided to support the change:
https://watereuse.org/
https://watereuse.org/educate/national-blue-ribbon-commission-for-onsite-non-potable-water-systems/

Amendment V

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Name: Lydia Silber

Employer or who you represent with this change: WateReuse Association

Provide the chapter, section number, or type NEW or THROUGHOUT: 2.5.2.3 Commissioning of Dynamic Landscape Features

Existing Text copied from P100: All major capital projects, with a scope of site work exceeding 5000sf, must follow a standard total building commissioning process, aligned with the Agency standard, and adopted in 2006, to verify and measure performance and train operators of site-based dynamic systems. The measurement, performance verification, and staff education of complex site systems provided through this established process is critical to help lower a facility's life cycle and operational costs. This process can protect the physical, operational, and human capital investment and deliver effective design that addresses major and minor construction errors prior to project turn-over.

A list of site-related systems should be developed and evaluated early in the project development process for potential inclusion in commissioning-related activities. As is standard with the commissioning of building systems, many site-based systems are dynamic and could utilize a commissioning process to measure and verify performance and train the operators on the systems operation. Discussions regarding this evaluation should be included in the development of the Owners Program of Requirements, and if deemed appropriate, refined, and implemented throughout the project development process.

Dynamic site-based features and systems include, but are not limited to, the following:

- Water harvesting systems (tanks, pumps, controllers, water quality systems)
- Stormwater storage systems (collection, conveyance, and filtering elements).
- Stormwater drainage systems and structures
- Vegetative Roofs (drainage, irrigation)
- Irrigation systems
- Dynamic site perimeter security features
- Snowmelt systems

- Exterior lighting
- CCTV systems
- Weather station(s)

Proposed New Text: We propose adding the following bullet immediately after the "Stormwater drainage systems and structures" bullet: Water recycling and reuse systems.

Proposed Idea (If you have a general idea you would like considered, you may enter it here. (Ex. Eliminate the use of forced/slave labor for materials.) This requires more time for the review committees and may not be fully considered. Providing exact proposed text is the best way for full consideration.): N/A

Provide information about the background or justification for this change: Onsite water reuse is the process of collecting, treating, and reusing alternative water sources within a building or across multiple buildings for non-potable applications such as toilet flushing, irrigation, cooling towers, and industrial processes. Alternative water sources include graywater, blackwater, rainwater, stormwater, and foundation drainage. Onsite systems provide additional water supply and offset demands on valuable potable water supplies, important during periods of drought. They also manage stormwater, treat wastewater, and supply water for building occupants during natural disasters such as floods and earthquakes. Onsite water reuse systems can be complex and operators must receive appropriate training.

Provide information on the impact of life cycle cost. (Provide information about the life of the change including initial cost, operation and maintenance cost, replacement cost, and energy cost.): N/A

Impact on project cost. (Provide information about the first cost. Is the change more than, equal, or less cost compared to what is currently in P100?): N/A

Impact on risk. (Describe how the change may add or reduce risk.): Onsite systems provide additional water supply and offset demands on valuable potable water supplies, important during periods of drought. They also manage stormwater, treat wastewater, and supply water for building occupants during natural disasters such as floods and earthquakes.

Are there multiple American vendors?: Yes

Synopsis of research, web links, or other data provided to support the change:
https://watereuse.org/educate/national-blue-ribbon-commission-for-onsite-non-potable-water-systems/

Amendment VI

Email: lsilber@watereuse.org

Name: Lydia Silber

Employer or who you represent with this change: WateReuse Association

Provide the chapter, section number, or type NEW or THROUGHOUT: 2.5.3.2 Water Use

Existing Text copied from P100: All major capital projects, with a scope of site work exceeding 5000sf, are required to comply with the equivalent of sustainable SITES certification credit 3.2 to 'Reduce Water Use for Landscape Irrigation' and credit 3.4 to significantly 'Reduce Outdoor Water Use' for a minimum of 5 points. The goal of this requirement is to 'Protect and Conserve Water'. Where SITES certification is not being pursued, design submissions should follow SITES certification procedures for approach and documentation of this element.

CX agent to confirm installed features are functioning as per design and Facility Managers are trained.

Proposed New Text: Add the following paragraph underneath current text: In addition to the above, capital projects may use recycled water, either produced onsite through water treatment processes or sourced from a centralized treatment facility, to meet these requirements.

Proposed Idea (If you have a general idea you would like considered, you may enter it here. (Ex. Eliminate the use of forced/slave labor for materials.) This requires more time for the review committees and may not be fully considered. Providing exact proposed text is the best way for full consideration.): N/A

Provide information about the background or justification for this change: Water reuse, like water conservation and efficiency, can help the Federal Government meet its sustainability objectives.

Provide information on the impact of life cycle cost. (Provide information about the life of the change including initial cost, operation and maintenance cost, replacement cost, and energy cost.): N/A

Impact on project cost. (Provide information about the first cost. Is the change more than, equal, or less cost compared to what is currently in P100?): N/A

Impact on risk. (Describe how the change may add or reduce risk.): Water reuse is a risk mitigation and climate resiliency tool. In areas facing or anticipating water supply constraints, water recycling creates a stable, locally controlled supply, mitigating the impacts of drought and other threats to groundwater and surface waters. Western communities and water users have a long history of using water recycling to combat drought, for example. In water-rich areas, where overburdened centralized systems have been temporarily forced offline by flooding and other extreme weather events, onsite water recycling systems have allowed residential and commercial developments to produce their own clean water. During Super Storm Sandy, for example, when lower Manhattan and the surrounding region experienced severe flooding that disrupted power and sewer service to neighborhoods and towns, the Solaire residential development in New York City used its onsite recycling system to provide continuous service to its residents.

Are there multiple American vendors?: Yes

Synopsis of research, web links, or other data provided to support the change:
https://watereuse.org/

https://watereuse.org/educate/national-blue-ribbon-commission-for-onsite-non-potable-water-systems/

Amendment VII

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Name: Lydia Silber

Employer or who you represent with this change: WateReuse Association

Provide the chapter, section number, or type NEW or THROUGHOUT: 4.8.2 Site Utilities

Existing Text copied from P100:

- Utility Location – avoid trees, consider future maintenance, integrate into landscape design to minimize visual impact.
- Water – follow regulations of local water authority, locate behind curb lines or under sidewalks or unpaved areas, do not place under foundations or within building footprint. Provide maintainable strainers on all primary connections to the public water supply.
- Sanitary Sewer - follow regulations of local sanitary sewer authority, separate storm and sanitary systems on site, provide cleanouts 5' from building, provide manholes at service line entry points, provide drop manholes when service line does not enter at main sewer line invert, if septic systems are necessary, follow regulations of local code and provide 50% surplus capacity.
- Storm Drainage – follow local and state requirements, locate in unpaved areas, design for a 25-year storm, use gravity flow, rainwater not collected for reuse must be discharged into the storm drain. Small buildings in rural areas may use gutters, downspouts, and splash blocks.
- Coordinate site utility design with the requirements of chapters 5 & 6

Proposed New Text: See "Proposed Idea" section

Proposed Idea (If you have a general idea you would like considered, you may enter it here. (Ex. Eliminate the use of forced/slave labor for materials.) This requires more time for the review committees and may not be fully considered. Providing exact proposed text is the best way for full consideration.): Add bullet point on onsite water recycling. We suggest the following language: "Water Recycling – follow local and state requirements, follow codes, standards and best practices as detailed in National Blue Ribbon Commission for Onsite Nonpotable Water Systems publications, including Health Risk-based Benchmarks for Onsite Treatment of Water (2023) and Onsite Non-potable Water Systems Guidance Manual (2020), and model, consensus-based codes and standards that address onsite reuse.

Provide information about the background or justification for this change: Water reuse, like water conservation and efficiency, can help the Federal Government meet its sustainability objectives.

Provide information on the impact of life cycle cost. (Provide information about the life of the change including initial cost, operation and maintenance cost, replacement cost, and energy cost.): N/A

Impact on project cost. (Provide information about the first cost. Is the change more than, equal, or less cost compared to what is currently in P100?): N/A

Impact on risk. (Describe how the change may add or reduce risk.): N/A

Are there multiple American vendors?: N/A

Synopsis of research, web links, or other data provided to support the change:
https://watereuse.org/wp-content/uploads/2023/09/NBRC-Health-Risk-based-Benchmarks-for-Onsite-Treatment-of-Water_2023-09-08-1.pdf

https://watereuse.org/wp-content/uploads/2020/12/DRPT-4909.pdf

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Amendment VIII

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Employer or who you represent with this change: WateReuse Association

Provide the chapter, section number, or type NEW or THROUGHOUT: 5.3.2.3 Cooling Towers

Existing Text copied from P100: "Each chiller must have its own matching cooling tower or cell, condenser, and chilled water pump. Multiple cooling towers must have equalizing lines and the necessary automatic control valves for individual chiller/cooling tower operation. The cooling tower fan(s) shall be equipped with appropriately sized variable frequency drives to better control the condenser water supply temperature to the chiller(s). A minimum 4-foot clearance must be maintained between the top of the roof and underside of the cooling tower basin."

Proposed New Text: Add two additional paragraphs –

Blowdown Recovery: Implement a system to capture and treat a portion of the cooling tower blowdown water to reduce the need for fresh makeup water.

Filtration: Use advanced filtration systems to remove contaminants from the cooling tower water, allowing for multiple cycles of use before discharge.

Proposed Idea (If you have a general idea you would like considered, you may enter it here. (Ex. Eliminate the use of forced/slave labor for materials.) This requires more time for the review committees and may not be fully considered. Providing exact proposed text is the best way for full consideration.):

Provide information about the background or justification for this change: This text is necessary to account for two other major categories of cooling tower processes. Water recycling is commonly used for cooling purposes.

Provide information on the impact of life cycle cost. (Provide information about the life of the change including initial cost, operation and maintenance cost, replacement cost, and energy cost.): N/A

Impact on project cost. (Provide information about the first cost. Is the change more than, equal, or less cost compared to what is currently in P100?): N/A

Impact on risk. (Describe how the change may add or reduce risk.): N/A

Are there multiple American vendors?: Yes

Synopsis of research, web links, or other data provided to support the change: N/A

Amendment IX

Email: lsilber@watereuse.org

Name: Lydia Silber

Employer or who you represent with this change: WateReuse Association

Provide the chapter, section number, or type NEW or THROUGHOUT: 5.4 Plumbing

Existing Text copied from P100: "All projects installing domestic water heating (service water heating) equipment must use all-electric equipment. Ensure the analysis of alternatives and LCCA include solar water heating, ground source, air source and water source heat pump water heater technologies. When using electric resistance water heaters, size equipment based on careful consideration of intended usage (e.g. showering), recovery rate, and any hot water storage capacity. Fossil fuels may only be used to supplement electric-powered capacity: (a) during emergency backup situations; or (b) when low outdoor air temperatures prevent installed electric equipment from meeting the tenant's minimum service water heating water temperature.

In compliance with EISA 2007 Section 433(a), water conservation technologies must be applied to the extent that the technologies are life-cycle cost-effective.

GSA requires the use of plumbing products labeled under the EPA WaterSense program. WaterSense is a partnership program sponsored by the U.S. Environmental Protection Agency. Its mission is to protect the future of our nation's water supply by promoting and enhancing the market for water-efficient products and services.

More information is available at EPA WaterSense.

Plumbing fixture accessibility clearances, installation, and accessories must be compliant with the Architectural Barriers Act Accessibility Standard (ABAAS).

All plumbing fixtures must be water-conserving/saving-type fixtures, faucets, and valves. Low-flow water fixtures must be provided. Plumbing Fixtures and Fittings must comply with IgCC-2018 Section 601.3.2.1 (6.3.2.1) Water Closet flush valves must be manual dual-flush."

Proposed New Text: We recommend that the second paragraph be revised to read as follows: "In compliance with EISA 2007 Section 433(a), water conservation technologies must be applied to the extent that the technologies are life-cycle cost-effective. Along with water conservation technologies, onsite water recycling technologies may be applied and must comply with all applicable codes and standards."

Provide information about the background or justification for this change: Water reuse, like water conservation and efficiency, can help the Federal Government meet its sustainability objectives. Onsite water reuse is the process of collecting, treating, and reusing alternative water sources within a building or across multiple buildings for non-potable applications such as toilet flushing, irrigation, cooling towers, and industrial processes. Alternative water sources include graywater, blackwater, rainwater, stormwater, and foundation drainage. Onsite systems provide additional water supply and offset demands on valuable potable water supplies, important during periods of drought. They also manage stormwater, treat wastewater, and supply water for building occupants during natural disasters such as floods and earthquakes.

Provide information on the impact of life cycle cost. (Provide information about the life of the change including initial cost, operation and maintenance cost, replacement cost, and energy cost.): N/A

Impact on project cost. (Provide information about the first cost. Is the change more than, equal, or less cost compared to what is currently in P100?): N/A

Impact on risk. (Describe how the change may add or reduce risk.): Onsite water reuse systems provide additional water supply and offset demands on valuable potable water supplies, important during periods of drought. They also manage stormwater, treat wastewater, and supply water for building occupants during natural disasters such as floods and earthquakes.

Are there multiple American vendors?: Yes

Synopsis of research, web links, or other data provided to support the change:
https://watereuse.org/
https://watereuse.org/educate/national-blue-ribbon-commission-for-onsite-non-potable-water-systems/