

Indoor AirPlus Version 2

Response to Public Comment

July 31, 2024



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How to Use this Document

This document is intended to provide a summary of the comments on the EPA’s Indoor AirPlus Version 2 Verification Requirements and proposed program framework that were submitted following the draft published in February 2023. Provided below each comment summary is a response from the EPA explaining how the comments were taken into consideration and addressed in the program requirements.

V2 Program Framework

General Strategy

Comment Summary:

One commenter challenged the EPA that Indoor AirPlus is “mostly a check list for building and building component design,” but has limited utility without a “validated means to verify the outcome of the design recommendations proposed.” They suggested that the EPA “should focus on its expertise in air quality to verify building[s] according to IAQ.”

EPA Response:

The EPA appreciates these concerns and recommendations. Indoor AirPlus continues to offer not only specifications for building design and construction, but also a checklist for validation by independent Verifiers. The outcomes of the design and construction are verified upon completion of the home; however, the EPA recognizes that long-term outcomes and health impacts are harder to quantify and guarantee. The EPA hopes that continued scientific developments tying contaminant metrics to health outcomes will offer future ways to validate outcomes through performance-based IAQ metrics and monitoring.

Eligible Homes

Comment Summary:

One commenter suggested that the scope of certification for multifamily communities is unclear, asking if the asset to be labeled is at the unit (apartment) level or the whole building. The commenter suggested that including “amenity areas” with a whole building certification is their preference, and also that verifying each individual unit in a building would be time-consuming and add little value to quality assurance.

Another commenter asked if the EPA has a definition of “multifamily” for the purposes of eligibility for Indoor AirPlus certification. The same commenter asked for clarification about what is considered “common space” that is applicable to the verification requirements (e.g., an office located in a multifamily building).

One commenter applauded modification to the verification requirements that enhance participation for gut-rehabs, while another asked how the EPA defines “gut rehab.”

One commenter recommended removing the word “senior” from “senior care facilities” as there are other types of care facilities (e.g., memory care can include people w/ brain injuries of all ages), but to also include eligibility for group homes and to define that term (referencing HUD’s definition).

Another commenter suggested that the requirements exclude garages.

EPA Response:

The EPA intends for the certification to be applied to the dwelling or sleeping unit, as well as the building as a whole, which is why common spaces or “amenity areas” of multifamily buildings are included in the program verification requirements. As such, the EPA will continue to define certain requirements for common spaces. However, the EPA also agrees that affordability can be improved in multifamily buildings through streamlined verification and sampling procedures in many instances. As such, the EPA will continue to allow sampling of units in multifamily buildings where the EPA has approved such procedures as outlined in the HCO’s application for recognition.

The term “multifamily” in the context of the Indoor AirPlus program requirements describes a building with three or more dwelling or sleeping units (e.g., an apartment building, a multi-unit building without common space). It does not include a row or group of townhouses.

The EPA has not defined the term “gut rehab” but has included guidance on the intent within the Eligibility section of the National Program Requirements. The revised Indoor AirPlus Version 2 Verification Requirements also include specific direction for “newly installed” versus “existing” building features, providing flexibility to retain some existing components that may still have serviceable life. Note, however, that in existing buildings undergoing a “gut rehab,” an inspection of interior wall sheathing behind exterior cladding must be done prior to insulation and interior finishes. These requirements, and the project team’s ability to meet them, should direct the scope of renovation required to determine eligibility. Where project eligibility is uncertain, partners should request clarification and confirm eligibility with their HCO.

Regarding “senior care facilities,” the EPA is updating the eligibility requirements in alignment with the ENERGY STAR Multifamily New Construction Program, as such: For the purposes of eligibility, hotels, motels, assisted living and skilled nursing facilities that meet the definition of [Senior Care Communities](#) are not eligible for the Indoor AirPlus program. Dormitories, residence halls, buildings with single-room occupancies, supportive housing, cohousing, and other non-senior assisted living facilities are eligible for the Indoor AirPlus program.

The EPA also believes that the risks associated with garages and their connection to the occupiable spaces in buildings should continue to be addressed in the specifications.

General Merits of a Tiered Structure for Indoor AirPlus Certification

Comment Summary:

One commenter suggested that the introduction of a tiered structure could increase complexity and potential costs for program administration, along with potential industry confusion and/or “dilution of the brand”, without having certainty that the market needs such a structure and would adopt both tiers at scale.

A Builder partner suggested that Indoor AirPlus is not a large enough program to have two separate specifications and disfavors not including the ENERGY STAR certification prerequisite for the Certification tier. A Verifier partner suggested that having a pathway without an ENERGY STAR prerequisite could lead to “confusion related to program delivery.”

Another commenter recommended that Indoor AirPlus continue to use only one tier, suggesting that the Certified level may give the program less credibility in the market, potentially harming the brand. They also expressed concern that removing the ENERGY STAR pre-requisite may be seen as providing homeowners with a product of lower value than the certification under Version 1. This commenter stated that removing the ENERGY STAR prerequisite at the IAP Certified tier “misses an opportunity to take advantage of market demand that will be driven by the new tax credit” (referencing the passage of the Inflation Reduction Act and the \$2500 tax credit for ENERGY STAR certified homes). They also suggested that if the EPA decides to continue with just one tier of IAP, that the ventilation specifications proposed in the Gold tier should be required. Similarly, another commenter suggested that the EPA keep the Gold specifications as the only available certification tier.

Two commenters expressed affirmation for a tiered structure with a pathway to certification without ENERGY STAR certification as a prerequisite. Commenters agreed that the Certified path will be a cost-effective entry point into IAP for more builders and remodelers. Additionally, one commenter (0034) stated that by maintaining the option to achieve the “Gold” certification level, the EPA appropriately facilitates and rewards leadership in both energy efficiency through the ENERGY STAR prerequisite, and improved IAQ - two areas that are important concerns to home buyers.

One commenter suggested that the Gold tier should be limited to homes that are all-electric, while another recommended an Indoor AirPlus requirement specifying “beneficial electrification.”

EPA Response:

The EPA appreciates stakeholder concerns regarding the potential for additional complexity that may result from a new program version, including the development of a tiered set of specifications with just one pathway including an ENERGY STAR prerequisite. However, the EPA believes increasing long-term accessibility among builders with a tiered structure outweighs the initial challenges of a more involved program framework.

Additionally, the Indoor AirPlus V2 Certification tier does not prohibit a home from achieving the ENERGY STAR certification; it just is not required. Therefore, the absence of other pre-requisites in the Indoor AirPlus Certified tier does not preclude the possibility of the Indoor AirPlus Certified label being achieved along with ENERGY STAR certification and/or various other high-performance home programs. The EPA believes that a certification tier focused exclusively on indoor air quality, as previously requested by stakeholders and proposed in the last IAP V2 comment period, may offer increased opportunities for long-term market impact. As such, EPA will proceed with a tiered certification structure to encourage improved IAQ protections at various entry points in the high-performance construction market.

Regarding building eligibility in the Gold tier, the EPA appreciates the recommendations on “beneficial electrification” and limiting certification to all-electric homes. However, with the release of Indoor AirPlus Version 2, EPA intends to continue providing eligibility and encouraging IAQ improvements for residential buildings, regardless of fuel types present in the home/building.

Document Format in a Tiered Structure

Comment Summary:

One commenter suggested that there are now too many program documents, and that one overarching document would be preferred.

Another commenter suggested that there may be confusion about the applicability of the overarching National Program Requirements which were titled “Indoor AirPlus Certified Homes”, asking if those program requirements also apply to the “Gold” tier. This commenter also recommended the creation of an Excel-based checklist for both the Certified and Gold tiers.

EPA Response:

With regard to the proposed certification system and number of program documents, Indoor AirPlus is generally following similar program models already in place with WaterSense New Homes and ENERGY STAR Residential programs. However, Indoor AirPlus has included both single-family and multifamily eligibility under one set of specifications, rather than having separate oversight structures and documents for both sectors. In response to stakeholder feedback, the EPA has also combined the IAP Verification Requirements for the Certified and Gold tiers into one document, with revised formatting for ease of use. The EPA will continue to evaluate the structure and format of the tiered certifications as Indoor AirPlus Version 2 is implemented.

Regarding the National Program Requirements, this document will provide an overarching structure for both certification tiers, without the need for a separate document describing eligibility requirements, credentialing/training, and the certification process.

The EPA also believes the program, in coordination with both established and emerging HCOs, can continue to address concerns related to program delivery as Version 2 is implemented in the market. The EPA will continue to consider the development of an Excel-based checklist as well as integration with established rating software to assist with streamlined verification.

Indoor AirPlus Home Verification

Comment Summary:

One commenter stated that it is unclear “who will monitor the programs and how they will be certified”, adding that without such monitoring, a building checklist has minimal utility.

Another commenter asked if the EPA has any allowances for remote verification of IAP labeled homes. They also requested more specific requirements for HCOs surrounding allowable sampling protocols for Indoor AirPlus verification, to improve consistent application of sampling procedures across the industry.

One commenter asked if it is still applicable that HCOs would need to provide guidance to the Verifier on printing labels and certificates since the EPA has required the HCO to print these documents.

One commenter suggested the EPA create a template for all HCOs to use to provide required summary reports.

Other commenters suggested that the draft Version 2 requirements and the removal of builder-verified checklist items would pose an additional burden on Verifiers, potentially requiring 3-5 trips to the site for inspections.

One commenter requested clarification whether Verifiers could complete one checklist per building or project, suggesting this should be outlined in the “Guidance for Completing the Indoor AirPlus Verification Checklist” section of the verification requirements.

EPA Response:

Regarding the program monitoring and oversight, the EPA’s intent is to establish a market-based certification system where independent Verifiers inspect homes, both during construction and upon completion, to ensure builders have met program requirements to earn the Indoor AirPlus label. A quality assurance infrastructure administered by a Home Certification Organization (HCO) will conduct oversight of the Verifiers.

Regarding remote verification and the removal of builder-verified checklist items, in the Guidance for Completing the Indoor AirPlus Verification Checklist, the EPA continues to allow items to be “verified visually by the Verifier on-site during construction/rehabilitation, by reviewing photographs taken during construction/rehabilitation, by reviewing material or equipment documentation, or through equivalent methods as appropriate.” Additional guidance on the verification of low-emitting materials is included in Section 6 of the verification requirements, outlining the intent for builder/verifier coordination and streamlined verification at the beginning of a project, with simplified documentation requirements for larger communities, developments, and/or multifamily buildings. When reviewing documentation material described above in lieu of an in-person inspection, the Verifier must still confirm that the material sufficiently demonstrates compliance with the verification requirements. In other words, the Verifiers must still own the responsibility for verification of the checklist, while encouraging routine communication and coordination with the builder, and allowing for alternative inspection procedures (as they deem appropriate) to reduce the burden of fully on-site verification. It is the builder’s responsibility to ensure the veracity of the materials given to the Verifier. The Indoor AirPlus Certification System also permits the HCO to establish remote verification protocols and/or QA procedures, with EPA approval.

Regarding additional requirements for sampling, the EPA has not included further prescriptions on such protocols but will instead be reviewing proposed sampling procedures within HCO applications on a rolling basis and will provide additional direction to all approved HCOs for consistent application of sampling protocols across the industry. See also the discussion about “sampling” below.

Regarding the printing of labels and certificates, the EPA intends for the IAP HCO to oversee this aspect of the certification process, noting that the successful delivery of IAP labels and certificates is also a partnership requirement of IAP Verifiers under their purview.

Regarding templates for HCOs to provide summary reports, the EPA is developing an API to streamline certified home reports submitted to the EPA.

Regarding “builder-verified” items, please see the discussion about “builder responsibility” in Section 1 of the Verification Requirements.

The EPA agrees with the suggestion to clarify when a checklist must be completed and has added language to item 1 of the “Guidance for Completing...” section in the verification requirements: “For multifamily buildings, only one verification checklist is required, in accordance with an HCO’s approved sampling protocol. However, a completed and signed checklist must be able to be associated with each IAP certified home/unit.”

Verifier Eligibility, Credentials, and Training Requirements

Comment Summary:

One commenter suggested that ANSI/BPI-1200-S-2017 should be referenced as a minimum credential for Verifiers of both Indoor AirPlus Certified and Indoor AirPlus Gold Certified homes, as opposed to only those who verify homes at the Indoor AirPlus Certified tier. Another commenter (0006) asked for a list of EPA-approved credentials required for IAP Verifiers, as well as clarification on what is required by HCOs with regard to Verifier training. They also suggested that rather than requiring the HCO to define a code of ethics, this should be defined by either the EPA or the Verifier’s credentialing body.

A commenter requested that the EPA provide a list of approved certifications for Verifiers. They also recommended that the EPA provide a list of qualified Verifiers on an EPA webpage.

One commenter sought clarification on the HCO’s role in providing credentialing for the Verifiers in the Certification System document. The commenter asked if the HCO is expected to provide training and certifications needed by Verifiers to participate in Indoor AirPlus.

One commenter asked whether a Verifier is a person or a company.

One commenter commended the EPA for proposing training and credentialing requirements for Indoor AirPlus partners. They requested that the EPA make the training publicly available so raters and providers can incorporate it into in-house training programs for better access and management of their Verifier’s curriculum. They also recommended that the EPA review individual certifications and training on a regular basis.

EPA Response:

The EPA agrees the competencies required by ANSI/BPI-1200-S-2017 should be applicable to Verifiers of both the Certified and Gold tiers. HCOs may provide such training to their network of Verifiers or may rely on industry credentials to provide the knowledge, skills, and abilities for the Basic Analysis of Buildings. The EPA has updated the IAP National Program Requirements, while clarifying that additional credentials are required for Verifiers inspecting ENERGY STAR labeled homes in the Gold tier. The EPA intends for HCOs to demonstrate and articulate a code of ethics in their HCO application for EPA review and approval, rather than the EPA defining the specifics of such a code.

Instead of prescribing an “EPA approved list of credentials” for Verifiers, the EPA has defined specific minimum criteria for certifications that Verifiers can hold to participate, with latitude for prospective HCOs to suggest equivalent credentials for approval. The EPA is developing a Partner List that will be hosted on an EPA webpage.

The language in the Certification System has been updated to reflect the HCO's role to ensure Verifiers are qualified to participate in the program, and that Verifiers maintain their certifications as required. The EPA will provide specific Indoor AirPlus Version 2 training for all Verifiers and builders.

An Indoor AirPlus Verification Company is the entity that partners with the EPA through a voluntary Partnership Agreement. As noted in the Indoor AirPlus National Program Requirements, the term "Verifier" refers to the person(s) employed by a partnering IAP Verification Company and overseen by an HCO, who is completing the third-party verification required for IAP certification. The Version 2 training being developed by the EPA for Indoor AirPlus Verifiers and builders will be publicly available on an EPA webpage.

Expiration, Recertification, and Document Retention

Comment Summary:

One builder partner suggested that the expiration of the certification after 5 years was not in line with the 10-year documentation retention requirement for Verifiers. They also asked how the homeowner would be notified of the 5-year expiration and if the expiration would be included on MLS listings. They also suggested that most consumers would not want to pursue recertification.

Another commenter asked who would be responsible for initiating the re-certification process and if there are incentives or resources to help the owner through the process.

Another commenter noted that managing a recertification process would require additional administrative work for the EPA and homeowners. This commenter suggested that the homeowner would need to be aware of and apply the ongoing program requirements and that "ensuring that homeowners comply with the recertification requirement could be challenging, especially if there are no penalties for non-compliance."

Another commenter suggested that recertification may not be widely understood by realtors and that it may be challenging logistically if photos and videos from the initial certification are not available. They proposed that more exceptions and a specific re-certification checklist are provided if the EPA maintains the expiration/recertification process. They also asked if ENERGY STAR recertification would be required for homes seeking Indoor AirPlus Gold recertification following the proposed 5-year expiration of the Indoor AirPlus label, further suggesting that the value for ENERGY STAR certification in the Gold tier was unclear and that removing the ENERGY STAR prerequisite entirely could help reduce confusion in the market. Commenters opined that recertification could be costly and may not be easy to accomplish since recertification would be subject to the most current program requirements at the time of recertification. Another was concerned that an expiration on the label could lead to less participation in the program. They also characterized the 5-year expiration timeframe as arbitrary and not necessarily indicative of a home that requires updating. They suggested homes should be marketed by the date and program version they were certified under, and for the EPA to allow homeowners to recertify their IAP homes voluntarily so they can market their homes under a newer program version if they desire.

Four commenters offered support for an expiration on the label. A homeowner suggested that an expiration on the label is highly appealing for continuous maintenance on the home and homeowner education. Another commenter suggested recertification should occur as part of selling a home or prior to new occupants moving in.

Two Verifier partners suggested that a requirement to retain certification documentation for 10 years was not sensible for a certification that expires within 5 years, proposing instead that the EPA utilize RESNET's standards for document retention to avoid confusion. They also suggested that reinspection and recertification by the homeowner was unlikely, and that alternatives such as IAQ monitoring might be more impactful for existing homes.

Another Verifier partner suggested that only the HCO should be required to maintain certification documents for 10 years, but that Verifiers should have just a 5-year retention requirement.

EPA Response:

The EPA appreciates the feedback from homeowners, building partners, and industry experts on the proposal of an expiration for the label. Regarding the proposed certification expiration and recertification option, the EPA has decided not to pursue the expiration/recertification model at this time. This decision is based on concerns around the perceived negative impacts to program value and the logistics of recertifying homes, which would include the delivery of recertification criteria that has not yet been developed by the EPA. However, the EPA will continue to evaluate opportunities to enhance long-term performance, durability, and health protections in existing and previously certified homes to encourage sustained, improved IAQ outcomes for occupants.

Regarding document retention, without an immediate change to include expiration/recertification in the program model, the EPA will continue with the current requirement for Verifiers to retain Indoor AirPlus certification documents for a minimum of 3 years. However, the EPA believes that document retention is an important component of Quality Assurance and will continue to evaluate documentation requirements for both HCOs and Verifiers to maintain program integrity and facilitate future advancements for sustained IAQ outcomes.

Sampling

Comment Summary:

One commenter recommended that the EPA exclude certain program requirements from sampling protocols, such as radon and building envelope testing.

Two commenters suggested the EPA define “sampling”, so all HCOs use the same protocol. One commenter interpreted “sampling” to mean the collection of air samples, asking what samples should be taken, and another cautioned about potential variability among commercially available IAQ sensors for PM and VOC measurements.

One commenter suggested the EPA include townhouses in the multifamily sampling protocol.

EPA Response:

EPA has not determined exclusions to specific verification items within sampling protocols but will review and approve sampling protocols submitted in the IAP HCO applications. Where radon testing is used as a compliance option, it is performed per the ANSI/AARST/MA-MFLB-2023 standard (see <https://www.epa.gov/radon/radon-standards-practice>), which include their own set of requirements for test locations in multifamily buildings.

The EPA agrees on the value and importance of a well-defined sampling protocol. The EPA does not intend for Indoor AirPlus Verifiers to take other air quality samples (e.g. PM2.5, VOCs, etc.) nor to use IAQ sensors for compliance with the Indoor AirPlus Verification Requirements at this time. “Sampling” in the context of Indoor AirPlus Version 2 certification describes the process of verifying a percentage of dwelling units within the same building, rather than individually inspecting every dwelling unit.

The EPA continues to maintain alignment with the ENERGY STAR Residential programs and DOE Zero Energy Ready Homes with regard to the definition of townhouses and the current restriction of sampling in such units. Indoor AirPlus V2 will only permit sampling of dwelling units within a multifamily building, defined in the program requirements as “a building with three or more dwelling or sleeping units (e.g., an apartment building, a multi-unit building without common space). It does not include a row or group of townhouses”. As sampling protocols continue to be reviewed and improved, the potential inclusion of building types other than multifamily will be considered.

Quality Assurance / Quality Control

Comment Summary:

One commenter who previously purchased Indoor AirPlus labeled homes expressed concern that the homes did not meet the program requirements, and that the verifiers and trade contractors were not equipped with critical knowledge to implement the specifications, necessitating additional follow-up with the builder and with independent inspectors to develop reports on these alleged certification deficiencies.

EPA Response:

The EPA values the feedback from homebuyers and consumers regarding their experiences in Indoor AirPlus labeled homes under Version 1 of the program. As described in the executive summary posted in February 2023, with Indoor AirPlus Version 2, the EPA intends to introduce a formal certification system and more robust infrastructure for quality control and quality assurance to take place in the market, with oversight from EPA-recognized Home Certification Organizations (HCOs).

Comment Summary:

One commenter suggested that expectations for the HCO and the Verifier are not clear for home certification, field evaluation, and file evaluation. The commenter also suggested that a lower threshold for QA review could be applied to multifamily units, given the design consistency and higher construction quality observed in the multifamily sector.

One commenter stated that an annual field evaluation for every verifier could add up to substantial site visits, and requested the EPA change this requirement from annually to every 3 years in alignment with ENERGY STAR MRO requirements.

One commenter asked how allowing an additional file review in lieu of a field evaluation can be implemented if a file review needs to be performed for each project.

A commenter questioned whether the certification for multifamily projects is awarded at the unit or building level. The commenter advocated for a whole-building certification scheme, noting that indoor air is not fixed to one unit, but moves through an entire building.

One commenter asked if the EPA intends to have the HCO perform the first review prior to certification, similar to the design review required for ENERGY STAR Multifamily New Construction.

One commenter questioned whether 10% file review is sufficient, stating that they understand the intent of the program is for all projects to undergo a file review.

One commenter stated that quality assurance schemes that rely on hard-to-falsify data collected by the verifier (geotagged, timestamped photos, equipment readings, etc.) instead of 1% onsite QA will be critical to the scalability, cost, credibility, and market penetration of the IAP program. They claimed these types of data are efficient, cost-effective, flexible, and scalable, reducing disruptions to homeowners and builders, while enhancing documentation. The commenter did recognize that relying solely on geotagged, timestamped photos might not be sufficient in every situation.

EPA Response:

In terms of the format and frequency of field evaluations, and quality assurance schemes, expectations for HCOs regarding QA/QC are being further developed and will be featured in upcoming revisions to the Certification System.

As outlined in the National Program Requirements document, all IAP requirements must be met in all dwelling units, sleeping units, and common spaces in multifamily buildings. The Certification System assigns HCOs the responsibility for ensuring that IAP verification checklists are completed and

maintained by the Verifier, and that a checklist can be associated with every certified home and apartment, even where a sampling protocol is used.

The EPA agrees that air movement throughout an entire building is important to address. As such, Indoor AirPlus includes requirements that apply not only to the dwelling unit, but also to common spaces. Nonetheless, the certification is to be awarded to individual dwelling units, and all dwelling units and common spaces in a multifamily building must be compliant. Indoor AirPlus will continue to consider final enhancements to the QA/QC process in conjunction with ENERGY STAR's implementation of updated QA/QC practices in 2024, with alignment to the extent possible. The intent is for the Verifier to review all files for each IAP certification, but only a percentage of those files to be reviewed for quality control by the HCO. The EPA agrees that a percentage of homes and apartments selected for in-field QA/QC could require site visits by an HCO or designee on an annual basis.

The EPA does not intend for IAP HCOs to perform an IAP-specific design review.

The EPA appreciates the recommendations on "hard-to-falsify data" such as geotagged, time-stamped photos and will continue to explore such options while assessing alignment with other federal programs and HCO requirements.

Home Certification Organizations – Overarching Structure

Comment Summary:

One commenter questioned if the HCO structure is really necessary, suggesting that it adds expenses for verifiers and could potentially be political. This commenter also suggested that if an HCO structure is used, that ENERGY STAR HCOs should not be permitted to also be an IAP HCO, ensuring "the programs keep their focus."

Multiple commenters were in favor of Indoor AirPlus following the ENERGY STAR and Water Sense model for HCOs, while not requiring HCOs to participate in the other EPA programs. These commenters suggested that an HCO structure will provide options for improved oversight while increasing credibility and consistency of the Indoor AirPlus certification.

EPA Response:

The EPA agrees with commenters on the importance of strengthening oversight of the certification process.

The EPA also appreciates the concerns regarding an HCO structure. Nonetheless, the EPA believes that a similar, market-based structure for certification and oversight will allow the program to scale in the market while also offering more structured quality control and quality assurance to improve program implementation and consistency in the verification of labeled homes.

The EPA agrees that each of the residential certification programs has a particular area of focus. However, the EPA also recognizes potential synergies and economies of scale that can be realized by allowing HCOs to participate in any or all of the EPA certification programs, where they have a network of verifiers with the appropriate expertise to provide verification in the respective disciplines of energy, water, and indoor air quality. The EPA will continue to evaluate the HCO model and modify oversight requirements, as needed, as Indoor AirPlus Version 2 is implemented.

Home Certification Organizations – Scope of Oversight

Comment Summary:

One commenter asked if a project could be certified independently by both an ENERGY STAR MRO [or HCO] and a different Indoor AirPlus HCO.

One commenter asked if Verifiers could submit certified homes to any HCO, and if an ENERGY STAR MFNC MRO that becomes an IAP HCO would be able to verify projects that do not meet the requirements of MFNC, as well as Gold and Certified IAP homes, or Gold homes only. The commenter suggested clarifying in the application process by prompting the applicant to choose which paths they are planning to verify (Gold or Certified, if not both).

One commenter suggested it is not clear in certain areas what is to be provided by the HCO, the EPA, or another party outside the EPA and the HCO.

EPA Response:

While it may not be practical in many cases to have different HCOs oversee the certifications for ENERGY STAR and Indoor AirPlus separately, the Indoor AirPlus Certification System does not prohibit this option.

The EPA intends to align IAP HCO requirements and application processes with those of the ENERGY STAR Residential programs, to the extent possible.

The EPA will clarify the responsibilities of HCOs, the EPA, and Verifiers in upcoming revisions to the Indoor AirPlus Certification System.

Home Certification Organizations – General Requirements

Comment Summary:

One commenter suggested that rather than requiring the HCO to create and maintain a publicly available database of Indoor AirPlus certified homes and apartments, and to list their approved Verifiers, the EPA should maintain these lists that all HCOs can access to confirm if they are eligible to participate in IAP certification. They also asked the EPA to clarify if the HCO must be a credentialing body for verifiers.

The same commenter asked if the ethics complaint process would provide a means for Verifiers and designees to submit complaints about an HCO. This commenter also asked the EPA to provide more information regarding the frequency of the need for HCOs to work collaboratively with the EPA to facilitate comprehensive and coordinated investigations and responses QA findings, certification discrepancies, and inquiries from building owners or occupants.

One commenter said the requirement for “independent governance” may be difficult for current ENERGY STAR MROs to apply as IAP HCOs, recommending that the EPA should simplify the application process and align the requirements with the ENERGY STAR MRO application.

Another commenter suggested the EPA clarify and include requirements around HCO staffing and whether HCO approval is contingent upon specific staffing arrangements. They suggested the EPA provide examples of acceptable personnel qualifications, such as professional accreditations or areas of expertise, as well as levels of experience.

The same commenter suggested the EPA follow the industry standard practice of requiring Verifiers to maintain professional liability and automobile insurance as a requirement to become an IAP Verifier. HCOs would verify their Verifiers are insured annually as a condition of their professional accreditation.

One commenter requested better visibility of certified homes and an efficient registry and reporting process.

One commenter asked that the EPA disclose how much time will be required of the HCO for meetings and other coordination so they can build this into their costs.

One commenter stated their home did not come with an Indoor airPLUS label or documentation.

One commenter suggested it sounds like the HCOs are responsible for creating a program, not just being a 3rd party reviewer. They recommend the EPA changes language to refer to “EPA’s Indoor airPLUS Certification Program.”

EPA Response:

The EPA does not require the HCO to be a credentialing body for verifiers. While the EPA will maintain a list of Indoor AirPlus partnering verification organizations, the EPA requires the HCO to maintain and make publicly available a database or spreadsheet of Indoor AirPlus certified homes and apartments and a list of individually approved Verifiers whom the HCO will oversee within their Quality Assurance infrastructure and protocols.

In regards to the ethics complaint process, the EPA will accept complaints from Verifiers and designees regarding HCOs.

The EPA cannot predict the number of complaints or discrepancies that may arise at any given time in an HCO’s portfolio of oversight.

The EPA agrees that the application process for IAP HCOs should be simple and intuitive for current HCOs/MROs participating in other federal certification programs and has taken steps to align IAP HCO requirements for ease of application. The EPA intends for the “independent governance” function to be demonstrated by the ability of the organization to operate impartially, maintain policies to ensure potential conflicts of interest are avoided, and establish an impartial conflict resolution process.

While staffing and competency is an important aspect to demonstrate in a prospective HCO’s application, the EPA does not intend to dictate the specific staffing arrangements of IAP HCOs or mandate required credentials for the variety of staff supporting the different functions of the HCO. Applicants should demonstrate that staff within their organization, or designees working under a contract or formal agreement, have sufficient expertise to implement all applicable requirements outlined in the Certification System.

The EPA appreciates the commenter’s suggestion to require liability and automobile insurance for IAP Verifiers. However, the EPA does not intend to mandate insurance as a condition for any partners to participate in the program. Oversight organizations such as HCOs or local jurisdictions may, of course, institute such requirements.

Pending updates to the IAP Certification System will include clear expectations for HCOs regarding publicly available data. The EPA is currently developing a new reporting system for more efficient reporting of Indoor AirPlus homes. HCOs are required to maintain a public database of certified homes.

Coordination between EPA and HCOs will depend on many variables that cannot be predicted. Therefore, estimating how much time an HCO may need to budget for meetings and other coordination is not practicable given the dynamic nature of individual situations throughout the administration of a certification system.

EPA appreciates comments from owners of Indoor AirPlus homes. Taking this comment into consideration, EPA is exploring ways to increase QA/QC on certified homes to ensure homes meet the Indoor AirPlus requirements, which includes labeling and documentation, and to enhance training and supporting documentation to ensure homeowner access to important information regarding their Indoor AirPlus home.

Document Format, Terminology

Comment Summary:

One commenter was in support of using the acronym HAC in lieu of HVAC. This commenter also suggested defining the term “accessible”.

One commenter asked the EPA to define “client,” comparing the contracts MROs maintain with the Rater in the ENERGY STAR MFNC framework.

Several commenters described confusion while trying to discern requirements that overlap with ENERGY STAR, and similarly, in distinguishing requirements to achieve Indoor AirPlus Gold certification.

EPA Response:

Regarding the definition of “accessible”, the EPA recognizes the terms “accessible” and “readily accessible,” as defined by ASHRAE 62.2:

Accessible: capable of being reached for operation, renewal, inspection, removal, and exposure without damaging the building structure or finish.

Accessible, readily: capable of being reached quickly for operation, renewal, or inspections without requiring those to whom ready access is requisite to take actions such as use tools (other than keys), climb over or under, remove obstacles, or resort to portable ladders.

The EPA has aligned definitions with ENERGY STAR where possible.

The EPA agrees with commenters’ desire for a simple way to distinguish ENERGY STAR requirements within the Indoor AirPlus Verification Requirements. Therefore, Indoor AirPlus requirements are shown in italics when they also meet related ENERGY STAR requirements, and ENERGY STAR footnotes and exceptions are permitted unless otherwise specified.

The EPA also agrees that it is more efficient to include the Indoor AirPlus Gold requirements in the same document so users can more easily recognize the differences between the two tiers. Where applicable, requirements are preceded with a “GOLD” indicator.

Indoor AirPlus Program Operation, Outreach

Comment Summary:

One commenter stated their realtor had never heard of Indoor airPLUS and did not know how to sell their IAP labeled home. The commenter said there is a gap in helping to explain the value of IAP to the general public, and it would be helpful for the EPA to equip realtors with marketing materials for selling and maximizing value for IAP labeled homes.

EPA Response:

The EPA recognizes the value of marketing to homebuyers and sellers. The EPA will continue to examine ways to help educate realtors and the general public about the benefits associated with Indoor AirPlus certification. Additionally, the EPA has established an “IAP Homeowner Resources” webpage with additional information for homeowners about their Indoor AirPlus home.

Comment Summary:

Two commenters expressed confusion about the effective dates for current and future program implementation, with one assuming that effective dates might be determined by the HCO rather than by the EPA. Another commenter recommended a longer implementation period for multifamily projects since they may take longer in design and permitting and referenced the 14-month implementation period for ENERGY STAR MFNC (Rev. 3).

EPA Response:

The EPA proposed an estimated 1-year implementation period with continued availability of IAP Version 1 before sunsetting the older specifications. After reviewing stakeholder feedback and considering the requests for a longer adjustment period for builders and developers, the EPA has adjusted the

anticipated timeframe for IAP Version 1 to continue to be available through calendar year 2025. As such, Version 2 of the program requirements would become fully mandatory for building permits starting January 1st, 2026. These dates are subject to change as the EPA monitors the launch and implementation of IAP Version 2.

Comment Summary:

One commenter recommended that the EPA provide more clarity on the process for providing the Indoor AirPlus certificate and label.

EPA Response:

The EPA appreciates the interest in further understanding the process by which the Indoor AirPlus label and certificate are delivered. Item 4 of the “Guidance for Completing the Indoor AirPlus Verification Checklist” section in the verification requirements states, “The Verifier shall coordinate with their HCO/Designee and/or builder/owner to provide an Indoor AirPlus label and certificate for each qualified home/unit.” The National Program Requirements document specifies the process further:

6. Each certified unit must be issued a completed Indoor AirPlus certification label to be affixed to the circuit breaker box (or other suitable location) and an Indoor AirPlus certificate. Certificates and labels are issued to the Verifier by the HCO. For multifamily, building-level certificates are also available upon request.
7. The Verifier must either provide the certificate(s) to the home/building owner or forward the certificate(s) to the builder, who then must provide the certificate(s) to the home/building owner.

Comment Summary:

Commenters requested a simpler way to obtain partnership agreements and a more user-friendly partner locator tool to better understand the partnership status of builders and Verifiers.

EPA Response:

The Indoor AirPlus program has historically leveraged various other EPA IT tools (e.g. ENERGY STAR’s Partner Locator and HOST reporting system) and will continue to collaborate with other EPA offices on program infrastructure, while exploring new enhancements for program partners and the public. The EPA will continue to evaluate opportunities to improve the online user experience as the partner locator tool(s) continue to evolve.

Section 1. Moisture Control

Section 1 Overall

Comment Summary:

A commenter suggested that various foundation moisture control items will require a significant increase in the number of inspections, especially given there are no builder-verified items permitted. Therefore, the requirements may be cost prohibitive for some builders.

A commenter also suggested that most moisture management requirements should apply to buildings in the Moist (A) Zone, and that utilizing the exemption for a professional to determine Group I soils is onerous.

EPA Response:

EPA recognizes that risk reduction regarding bulk water and moisture management are common measures taken by builders of high-performance homes. The IAP requirements are intended to guide and enhance these measures without adding unnecessary burden for the builder or Verifier. Therefore, the verification method for twenty-two of the thirty-four items in Section 1 were changed to “Builder

Responsibility”, reducing verification costs and improving overall affordability of certified homes. To address consistency and enforcement of those basic moisture management provisions, builders will be required to review those items with a Verifier, confirming their understanding and application of those practices through a signed “Builder Responsibility” form, documented and retained by the Verifier at least once per development/community. While Indoor AirPlus continues to have various requirements tailored to specific climate, moisture, or radon zones, foundation moisture control is project-specific, regardless of Climate Zone. Like many 2021 IRC/IBC Code requirements, EPA does not exempt certain climate zones from many of the Section 1 items.

Item 1.1 Site Drainage

Comment Summary:

Commenters requested an additional exception to the tamping of backfill for steep-sloped terrain by including exterior drainage measures installed with foundation waterproofing.

EPA Response:

The tamping requirement in Item 1.1.2 applies to newly installed or disturbed backfill, which means the area should be accessible for tamping if it was accessible for installation or disturbance. Therefore, the requested exemption was not included.

Item 1.2 Foundation Drainage

Comment Summary:

One commenter noted the potential difficulty for Rater verification when drains are underground or inaccessible and recommended that EPA clarify that drainpipes can meet the requirement by being directly connected to storm/sewer.

Another commenter suggested sump pump discharge extensions are removed during winter to avoid freezing which complicates verification efforts.

EPA Response:

EPA appreciates the challenges with verifying items below grade or underground. Therefore, verification of this item was changed to “Builder Responsibility” (see Section 1 Overall response).

EPA agrees that, in addition to drainage discharging a minimum of 5 ft. from the foundation, it is acceptable to discharge to an approved stormwater system. While that may include sewer systems, not all municipalities allow this practice; therefore, language was added to A1.2.2: “or to a storm water system approved by the authority having jurisdiction.”

Removing sump pump discharge extensions during the winter is not recommended. The following advisory was already included to address freeze potential: “A1.2.2b In CZ 4 and higher for wet sites with deeper foundations, a freeze guard or a similar fitting with integral openings is recommended where the pipe exits.”

Item 1.3 Bulk Water Prevention

Comment Summary:

One commenter asked for clarification regarding Item 1.3.1 regarding how many drains are required when a large building has several rooms in the basement at the same below grade level.

EPA Response:

While it may be advantageous to install a floor drain or monitoring device in several locations, EPA bases this requirement on the lowest level below grade, rather than the number of areas or rooms. Therefore, only one strategy at the lowest level is required, regardless of how many rooms are located at that level.

Item 1.4 Capillary Break and Vapor Retarder

Comment Summary:

A commenter asked if a sill seal is an acceptable capillary break between the foundation wall and sill plate.

Commenters noted some confusion regarding proposed exemptions for a capillary break under a slab-on-grade and vapor retarder requirements in Moist (A) Zones, which are not considered best practice or exempted in model codes. A commenter asked how the capillary break applies to turned down slabs that have integral footers.

Commenters also requested clarification between “Vapor Barrier” and “Vapor Retarder” since both were used in this section.

One commenter had several suggestions regarding vapor retarder classification and applicability of the requirements to all climate zones. The commenter also recommended strengthening the specifications for the Gold tier with additional requirements for a vapor retarder system beneath the slab, moisture-sensitive flooring, and to convert advisories regarding the vapor barrier standard and installation guidance to requirements.

EPA Response:

EPA recognizes that a sill seal laid on top of the foundation is typical practice and using such method would comply with the requirement for a capillary break between the concrete and the framing.

In terms of the appearance of an exemption for a capillary break under a slab-on-grade in Moist (A) Zones, Item 1.4.1 addresses the base under slabs, such as aggregate or geotextile drainage matting, with an exception for buildings built on Group I soils. Item 1.4.2 has been revised to include a Class A or Class B vapor retarder (as defined by ASTM E1745) in direct contact with the slab. There is no such exception for a capillary break for slab-on-grade foundations.

In terms of “Vapor Barrier” vs. “Vapor Retarder,” EPA appreciates and agrees with the commenters’ concerns for consistency. To more closely align with code terminology and to address unique aspects of both vapor permeance and durability of vapor retarders, the word “barrier” was replaced with “retarder” in this section.

Regarding how a capillary break applies to turned down slabs that have integral footers, EPA believes a polyethylene vapor retarder extended under the stem wall is one solution for this type of construction. See [Building America Solution Center](#) for details.

EPA agrees with the importance of foundation and slab moisture control in all climate zones and has removed reference to Moist (A) Zones in Sections 1.4.1 through 1.4.3. Furthermore, EPA agrees that referencing ASTM E1745 is helpful, therefore Class A or B vapor retarder conforming with ASTM E1745 replaces Class I language. An advisory to install 10-mil has also been added. EPA appreciates the comment regarding moisture sensitive flooring but believes the maximum 0.1 perm requirement of ASTM E1745 and the practice of following manufacturer recommendations for flooring installation are adequate guidance.

Item 1.5 Damp-proofing and Waterproofing Below-Grade Exterior Walls

Comment Summary:

One commenter asked for clarification on Item 1.5.1 on wood framed below grade walls. The commenter also expressed concern about verifying below-grade items.

Commenters recommended allowing builder verification for Item 1.5, suggesting an undue burden and additional expense could be added by requiring a Verifier inspection.

Another commenter voiced confusion about “Newly Constructed” versus “Newly Installed,” specifically as it applies to gut rehabs and recertification in Item 1.5.

EPA Response:

Item 1.5.1 aligns with the 2021 IRC Section R406.3, *Dampproofing for wood foundations*. While below-grade wood walls are not common in many regions of the US, they are still allowed by code and require specific sealing and damp proofing. To address concerns regarding the expense and burden of verification, this item was changed to “Builder Responsibility” (see Section 1 Overall response).

The term “Newly Constructed” was removed from the specification.

Item 1.6 Basement and Crawlspace Conditioning

Note: The requirement for basement/crawlspace sealing was moved to Item 5.4.1, and the requirement for basement/crawlspace humidity control was moved to Item 4.2.3.

Comment Summary:

A commenter asked if the basement dehumidification requirement can be met with a portable unit as opposed to a centralized system. They suggested a central system solution may harm efforts for energy efficiency and could have a negative impact if humid air is moved from the basement into other areas of the dwelling.

Another commenter asked if a heat recovery ventilation (HRV) would be considered as compliant with the active dehumidification requirement.

A commenter shared that their IAP labeled home had problems with humidity because there was no return intake in their basement since the builder considered the basement to be unconditioned space, recommending the specifications include protections against such conditions.

EPA Response:

A portable dehumidification unit may be used to fulfill the requirement if it is sized for the total volume of the basement and/or crawlspace according to manufacturer’s recommendations, programmed to maintain relative humidity (RH) at or below 60 percent, and continuously drains to the outside or to a sump pump. While Indoor AirPlus prioritizes moisture management, the EPA is also concerned with energy use for dehumidification systems. Therefore, an advisory is included that where installed, ENERGY STAR certified whole home or portable dehumidifier(s) are recommended.

The EPA understands that humidity from a basement can travel to other areas of the dwelling. Item 4.2.2 addresses humidity in dwelling units by requiring equipment designed and installed with sufficient latent capacity to maintain indoor RH at 60% or below in IECC Moist (A) Climate Zones 1-4. It is the EPA’s intention to manage humidity in basements and crawlspaces while also addressing above grade spaces in high-risk zones. Additionally, advisories A1.6a, A1.6b, and A1.6c are included to address swing seasons or low-load periods by recommending an active system in lieu of an HAC system, to locate the humidity sensor in the basement or crawlspace, and by recommending a humidity monitoring device that includes a digital display of indoor temperature and RH.

HRV’s do not generally perform as supplemental dehumidification. However, any appliance that meets the requirements of supplemental, active dehumidification as outlined in item 1.6.2 would be considered acceptable: sized for the total volume of the basement and/or crawlspace according to manufacturer’s recommendations, programmed to maintain relative humidity (RH) at or below 60 percent, and continuously drains to the outside or to a sump pump.

The EPA regrets that the homeowner underwent additional expense and effort to correct humidity in their basement. Indoor AirPlus v1.4 currently requires sealed and insulated basements with conditioned air provided at a rate not less than 1 CFM per 50 sq. ft. of horizontal floor area. While this can be achieved by a dedicated supply through crawl-space exhaust, a return duct is not required, and the requirement does not directly address dehumidification. Version 2 is intended to address potential humidity concerns in Moist (A) and Marine (C) Zones since a basement or crawlspace must either be served by a Heating and Cooling (HAC) system with humidity controls (outlined in Item 4.2.2) or provide supplemental active dehumidification, sized for the total volume of the basement and/or crawlspace according to manufacturer’s recommendations. If the latter, the dehumidifier shall be programmed to maintain relative humidity (RH) at or below 60 percent and shall be continuously drained to the outside

or to a sump pump. Version 2 also includes advisories to address “swing seasons” or low-load periods, and the location of humidity sensor(s), as well as humidity monitoring devices.

Item 1.6.2

Note: This item was moved to 4.2.2.

Comment Summary:

One commenter asked whether a building with several rooms in a basement would require a HAC with humidity control or an active dehumidification system in each room of the basement.

Another commenter asked for examples of acceptable HAC controls.

EPA Response:

While the EPA believes humidity control is an important indoor air quality strategy, it recognizes the burden of providing multiple systems or sizing HAC for basements in multifamily buildings. Although the requirement still applies to all crawlspaces, Indoor AirPlus has added the following exception: E4.2.3 Spaces that are unfinished and/or not occupiable which are located in basements of multifamily buildings.

In Section 4, Note 4.2.2b describes acceptable controls as containing RH sensors that automatically turn the system off upon reaching the RH setpoint, and either prevent over-cooling or include a re-heating feature to maintain indoor temperature setpoints.

Item 1.7 Drainage Plane and Flashing

Comment Summary:

A few commenters recommended allowing builder verification, alleging an undue burden and additional expense by requiring Verifier inspection.

EPA Response:

The verification methods for this item were changed to “Builder Responsibility” (see Section 1 Overall response).

Item 1.8 Exterior Window and Door Openings

Note: This is now Item 1.7.

Comment Summary:

One commenter suggested Item 1.8.2 should be clarified to apply to “exterior” windows and doors.

EPA Response:

The requirement that, “windows and doors must fully close and latch” was removed. The EPA believes the air infiltration requirements (Item 5.4.2) adequately reduce the risk of malfunctioning windows and doors.

Item 1.9 Gutters, Downspouts, and Roof Water Drainage

Note: This is now Item 1.8.

Comment Summary:

One commenter recommended an exception for gutters, downspouts, and roof water drainage systems when basements and/or crawlspaces are waterproofed, which the commenter clarifies as being different than damp proofed.

EPA Response:

The EPA agrees with the commenter and has added an exception in E1.8.1g.

Item 1.10 Roof to Wall Intersections and Roof Penetrations

Note: This is now Item 1.9.

Comment Summary:

A few commenters recommended allowing builder verification, citing additional burden and expense by requiring Verifier inspection for these items.

EPA Response:

To address concerns regarding the expense and burden of additional inspections, verification of this item was changed to "Builder Responsibility" (see Section 1 Overall response).

Item 1.11 Roof Valleys and Decking

Note: This is now Item 1.10.

Comment Summary:

A few commenters recommended allowing builder verification, citing additional burden and expense by requiring Verifier inspection.

EPA Response:

To address concerns regarding the expense and burden of additional inspections, verification of this item was changed to "Builder Responsibility" (see Section 1 Overall response).

Item 1.11.2.2

Note: This is now Item 1.10.2.2.

Comment Summary:

It was stated that in the case where a roof drain occupies a chase, that chase area will need to be approximately 6 inches wider to accommodate the space needed for 3 inches of vapor impermeable insulation around the pipes.

EPA Response:

While roof drains insulated through the assembly is a requirement, it is only an advisory (A1.10.2.2) to use 3 inches of vapor impermeable insulation to help ensure an R value sufficient to keep vapor drive from the assembly. The recommendation is to accommodate different roof assemblies. However, as the commenter suggests, a roof drain in a chase would require enough clearance around the drain to accommodate the 3 inches of impermeable insulation. The EPA believes this is a good practice but has included the suggestion as an Advisory rather than a requirement.

Item 1.11.2.3

Note: This is now Item 1.10.2.3.

Comment Summary:

It was asked whether sealing a typical thermoplastic polyurethane (TPU) membrane to oriented strand board (OSB) is sufficient to meet the requirement, since the roof assembly air control layer must be connected over other roof elements (e.g., curbs and blocking) and connected to the wall air control layer.

EPA Response:

A typical TPU roof membrane sealed to OSB would meet this requirement if it is also sealed over and around other elements of the roof and connects to the wall control layer. For a flat roof this might mean over the top of a parapet or top plate. Additionally, Item 1.10.2.4 requires materials that form the water control layer to overlap with each other in shingle fashion or be sealed in a watertight manner.

Item 1.12 Ice Dam Prevention

Note: This is now Item 1.11.

Comment Summary:

Commenters recommended allowing builder verification, citing additional burden and expense by requiring Verifier inspection.

EPA Response:

To address concerns regarding the expense and burden of additional inspections, verification of this item was changed to “Builder Responsibility” (see Section 1 Overall response).

Item 1.12.1 1

Note: This is now Item 1.11.

Comment Summary:

A commenter suggested rewording this item for clarification.

EPA Response:

The EPA appreciates the comment to simplify this language and has reworded the requirement to align with model code “in accordance with 2021 IRC R905.1.2”.

Item 1.13 Interior Roof Deck Inspection

Note: This Item was removed, and a portion of the requirement is found at 1.17.1, Interior Inspection (gut rehabs only).

Comment Summary:

It was suggested that visually verifying water leaks at the roof deck might be difficult to verify unless it’s raining at the time of inspection. Commenters recommended removing the requirement or requiring builder verification, based on an alleged liability issue for Verifiers if a leak is discovered after construction is completed.

A commenter identified potential verification issues with sealed attics or netted and blown attics, and suggested an exception be made accordingly.

EPA Response:

The EPA understands Verifier concerns regarding the timing and responsibility of this inspection. However, identifying bulk water intrusion is critical to the prevention of indoor air quality issues caused by mold, particularly in existing buildings where various elements in the building envelope (e.g. roofing, cladding, WRB, flashing) might continue to perform their intended function and may not need to be removed for historical reasons and/or cost considerations. Recognizing this type of interior “pre-insulation” inspection may have more value in existing buildings, this requirement was moved to Item 1.17.1 Interior Inspection, applied to gut rehabs only, and now reads: “. In all accessible attic and roof assemblies, visually verify no active water leaks, as evidenced from active water intrusion or staining on roof decking and/or ceiling materials. Where moisture intrusion is evident through roof assemblies, sufficient roofing materials must be removed to adequately repair leaks.”

The requirement is to identify “*active* water intrusion or staining” (emphasis added), so while the Verifier should not be held liable for any future changes to conditions in the building envelope, the intent is to perform a visual inspection of the roof/wall sheathing, sufficient to identify evidence of water intrusion that may require envelope repairs prior to the installation of insulation.

Note N1.17.1.1 provides guidance for the Verifier if the interior inspection reveals areas of envelope degradation or moisture intrusion. Item 1.17.1.2 provides further guidance and pathways for

remediation if the Verifier sees evidence of mold and/or stains from water or fungal growth or moisture issues.

Item 1.14 Moisture-Resistant Backing Materials

Note: This is now Item 1.12.

This item did not receive any comments. However, verification of this item was changed to “Builder Responsibility” due to its potential to add inspections for an item that is typical practice.

Item 1.15 Appliance Drainage

Note: This is now Item 1.13.

Comment Summary:

It was suggested there could be a significant cost to large multifamily buildings that have HAC units in each apartment and asked if this burden has been considered.

EPA Response:

Based on feedback from multifamily mechanical engineers and plumbers, the EPA believes that alignment with the 2021 suite of codes is appropriate including IMC Section 307.2.3. That section requires an auxiliary protection strategy in accordance with one of four methods listed. However, the EPA recognizes it may not be cost effective for existing buildings undergoing gut rehabilitations to implement a secondary drain system for some existing equipment. Therefore, a “newly installed” qualification was added to the IAP specifications. It is the EPA’s understanding that electronic condensate overflow protection is standard with most new appliances and would satisfy the 4th option from the IMC 307.2.3:

A water-level detection device conforming to UL 508 shall be provided that will shut off the equipment served in the event that the primary drain is blocked. The device shall be installed in the primary drain line, the overflow drain line, or in the equipment-supplied drain pan, located at a point higher than the primary drain line connection and below the overflow rim of such pan.

Item 1.16 Water Supply Pipes

Note: This is now Item 1.14.

This item did not receive any comments.

Item 1.17 Water-Resistant Flooring

Note: This is now Item 1.15.

This item did not receive any comments.

Item 1.18 Class I Vapor Retarders

Note: This is now Item 1.16.

Comment Summary:

It was suggested that this item should be referenced in Item 1.5 since it relates to below-grade exterior walls.

EPA Response:

The EPA agrees with the commenter and has added a reference to Item 1.16 in Item 1.5.1. Class I vapor retarders should not be installed on the interior side of vapor permeable insulation in below grade exterior walls.

Item 1.19 Materials with Signs of Water Damage or Mold

Note: Previous drafts of the specification included three inspection items: 1.13 Interior Roof Inspection, 1.18 Materials with Signs of Water Damage, and 1.19 Exterior Inspection.

The specification was edited to address all three items under Item 1.17 Moisture Management Inspection. Item 1.17.1 Interior Inspection is only applicable to gut rehabs and includes the Interior Roof Inspection requirements moved from Item 1.13. While Item 1.17.2 Exterior Inspection applies to all dwellings, the requirement for exterior drains and gutters designed to handle water and verified to be substantially free of debris has been removed from the specification.

Comment Summary:

Commenters suggested that verifying “no mold present” for gut rehabs should be done by a certified professional and the Verifier should only be responsible for collecting the appropriate reports.

Another commenter suggested that the interior inspection will likely lead to an additional inspection which will interrupt the schedule and cost. The commenter suggested removing the requirement or clarifying that verification can happen without disruption of cavity materials and at the same time as the ENERGY STAR Thermal Bypass Inspection (ES TBP).

EPA Response:

While the EPA believes the IAP interior inspections could be combined with inspections for the ENERGY STAR Rater Field Checklist (previously referenced as “Thermal Bypass Inspections”), it acknowledges the potential for additional cost and schedule interruption, particularly in new construction. Therefore Item 1.17.1 Interior Inspection has been changed to be only required for gut rehabs.

The EPA believes the credentials required to become an Indoor AirPlus Verifier are sufficient to equip these professionals to identify building envelope issues and signs of water intrusion, which may be addressed with further professional remediation if required. The EPA is sensitive to housing costs and construction/verification sequencing, which is why a certified mold service provider is not blanketly required. However, a project team may employ one voluntarily. The EPA believes the interior inspection can often coincide with inspections that are already planned into the Verifier’s schedule, so long as it is performed prior to insulation in gut rehab projects.

Section 2. Radon

Comment Summary:

Several commenters expressed concern about expanding the scope of radon testing, and at least one suggested Indoor AirPlus continuing using the EPA Radon Zone map in some form. Another opined that the requirement for testing in all zones would pose an undue burden in areas with significantly less radon prevalence and would likely have the effect of pushing builders to install passive systems in all homes due to the risk of failing a radon test during post-construction.

One commenter suggested the use of a qualified radon professional should be required for all radon testing, as opposed to the requirement being reserved for the use of a continuous radon monitor.

One commenter recommended expansion of the radon section to include controls and performance tests related to soil vapor intrusion of volatile organic compounds.

EPA Response:

The EPA proposed nationwide testing requirements to increase radon risk reduction among Indoor AirPlus homes. However, feedback from industry stakeholders suggested that prescriptive requirements for homes built in radon zones with the most risk are a more practicable approach than with mandatory nationwide testing. Therefore, the EPA revised the requirements to include both prescriptive and performance-based options, while continuing to advance radon protections in the areas

of highest risk. In summary, homes and buildings in Radon Zone 1 must feature either an active radon system, or a passive radon system plus testing upon completion. Homes in Radon Zone 2 can comply with either a passive radon system or testing upon completion. In Radon Zone 3, occupants of one- and two-family dwellings and townhouses must be provided with the EPA's "Basic Radon Facts" educational resource. The educational requirement for Radon Zone 3 does not apply to multifamily buildings, due to the additional complexities associated with multifamily development. Testing continues to be recommended, but is not required at this time, because the EPA believes such an approach would significantly decrease program participation. Concerns include, but are not limited to, potential additional carrying costs for the builder, perceived liability issues, and scheduling difficulties for testing in areas where testing is difficult. The EPA believes this approach appropriately balances market adoption and rigor to facilitate the maximum participation to improve indoor air quality at this time.

To improve consistency in enforcement and address concerns about the burden of verification with passive and active systems, Indoor AirPlus outlined key elements of radon-resistant construction, with responsibilities for both builders and Verifiers. The EPA continues to recommend consensus-based standards for radon-resistant construction, while also providing training resources for builder and Verifier partners. Indoor AirPlus specifications point to the ANSI/AARST MAH 2023 standard where it encourages homeowners "to test with either do-it-yourself home test kits or with a qualified radon measurement professional. When testing in association with a real estate transaction, it is encouraged that testing be conducted by a qualified radon measurement professional." The specifications also recommend the use of a qualified radon professional in all instances but recognize that service providers with a professional certification are not always available across all regions. Therefore, the suggestion will remain a recommendation for this version of the Indoor AirPlus specifications.

The EPA recognizes soil vapor intrusion carries other non-radon related risks. The radon protections required in Section 2 of the Indoor AirPlus specifications are to specifically address radon gas and its entry into the home. While these protections are intended to reduce the risk of negative health effects associated with high radon levels, these requirements may also protect against other soil vapor intrusion related health risks. However, the EPA does not have sufficient evidence to incorporate additional performance testing for volatile organic compounds at this time.

Section 3. Pest Barriers

Item 3.1 Termite/Insect Prevention

Note: This item was removed from the final version of the specifications.

Comment Summary:

Numerous commenters asserted that this requirement would confer responsibilities and liability upon Verifiers that are beyond their standard scope of work and certifications.

One commenter suggested including chimney openings in the termite assessment.

One commenter suggested the use of a particular material, but all options are open to address a termite problem with the present wording.

EPA Response:

The EPA agrees that the proposed requirement for an evaluation of active termite infestation and the visual inspections required by 3.1.2 are beyond the standard scope of work for Verifiers. To address these concerns, the "Termite/Insect Prevention" requirements have been removed in Version 2 but maintained the advisories in A3.1.

Item 3.2 Rodent/Bird Screens for Building Openings

Note: This item is now 3.1 "Pest Barriers."

This item did not receive any comments.

Item 3.3 Multifamily Pest Management

Note: This item is now 3.2.

Comment Summary:

There were multiple comments regarding floor drains in multifamily “common trash/recycling rooms,” requesting an explanation of intent, and one regarding the definition of “trash room” to determine applicability of the requirement.

One commenter cited the ALA recommendation for referencing the EPA’s Integrated Pest Management in Buildings which is cited in Item 3.3.1.

EPA Response:

Floor drains are commonly required by code in commercial restrooms to facilitate hosing down the floor. This Item applies the same concept to a room where it might be necessary to wash the floor regularly. Spills and other mishaps are not unusual in multifamily common trash/recycling rooms making a floor drain advisable. The EPA has included a floor drain in a common trash/recycling room (Item 3.2.3) as a requirement for the Indoor AirPlus GOLD Certified pathway only. This provides a practical approach to maintaining sanitary conditions in a trash room where there is likely to be a significant amount trash and recycling materials which may be a location of spills and other mishaps.

The EPA recognizes that an Integrated Pest Management Plan is the optimum approach to pest management and has included a reference to the Integrated Pest Management In Buildings in Item 3.2.1 as guidance for multifamily building maintenance staff.

Item 3.4 Pest-Contaminated Materials

Note: This item was removed from the final version of the specifications.

Comment Summary:

Three commenters recommended emphasizing the requirement for visual inspection linked to the engagement of a certified professional and a documentation of the investigation and mitigation of the removal of pest contaminated materials.

EPA Response:

The EPA believes that Verifiers are skilled observers who can recognize general evidence of pest contaminated materials such as odors, feces, nesting materials, etc., which will guide them to call upon a pest management professional to provide documentation and indicate that mitigation has been performed. However, the EPA also recognizes that Verifiers are not necessarily certified pest management professionals. Since the requirement goes beyond the standard scope of work and certifications for Verifiers, the requirement was removed.

Section 4. Heating, Cooling and Ventilation Systems

Item 4.1 Heating and Cooling (HAC) Systems

Comment Summary:

One commenter asked whether Note 4.1d in the Gold specification intended to limit MEP firms to using ACCA Manual S, given that many larger firms typically do not use it for equipment selection.

One commenter appreciated the requirement for calculating heating and cooling loads.

Another commenter appreciated the use of the phrasing “shall meet” in these items, because they believe that will result in higher actual compliance rates rather than stating “selected to meet”.

The last commenter on this item asked for clarification on Item 4.1.3, given the use of both “and” and “or” in the same sentence.

EPA Response:

Note 4.1d provides an alternative method for system sizing where equipment is outside the scope of ACCA Manual S. This option is intended to address the concerns that larger firms may have when using equipment not covered by Manual S.

Item 4.1.3 has been simplified in the final specification by removing “air balancing reports” and stating that either start-up reports or the results from functional performance testing can be used.

Item 4.2 Humidity Control

Item 4.2.1

Comment Summary:

Two commenters were not sure how “common” it was for thermostats to include relative humidity. One asked whether a “stand alone meter” would meet the requirement, such as the “AcuRite 00613.”

One commenter thought the monitoring requirement had “no effect on home performance” and suggested removing it. Another commenter supported the requirement for humidity monitoring, recommending a minimum performance specification and drift limit and for the requirement to be attached to a temperature measurement. They also recommended that the Advisory store the data for 30 days become a requirement and be increased to 60 days.

EPA Response:

The EPA found that numerous common suppliers of residential HVAC thermostats offer a thermostat with integrated RH display, which meets the requirement as stated in 4.2.1.1. In addition, a “stand alone meter” such as the one suggested would meet the requirement. While the EPA appreciates the additional rigor proposed by some commenters, given that humidity monitoring is a new requirement in Version 2, no change has been made to the Advisory. Based on the comments received, while the EPA believes that displaying the relative humidity information does offer value to the occupant, the requirement is removed from the Certified specification and is only required in the Gold specification.

Item 4.2.2

Comment Summary:

Two commenters thought that mandating dehumidification equipment in Moist (A) climate zones 1-4 could limit participation in the program. One commenter also noted that even in dry mode, “cooling is still provided”. Another commenter noted that dry mode is typically a manual (on-demand) feature and suggested that “this is not the intent of [your] standard” and suggested that the line in N4.2.2b should be deleted.

One commenter asked whether a “through-wall, ductless dehumidifier installed in a central location” would meet 4.2.2. Another asked whether “a central ERV system with added coil for dehumidification” would meet 4.2.2. One commenter asked which software programs provide the RH modeling capable of meeting Exception E4.2.2ii.

Finally, one commenter suggested that where humidifiers are installed, there should be requirements for the controls to be accessible and intuitive to enable occupants to change the maximum set point.

EPA Response:

The EPA appreciates the input that some design teams may find it challenging to specify dehumidification equipment in buildings in Moist (A) climate zones 1-4. As indoor comfort is a key component to indoor air quality, the requirement to control indoor humidity is fundamental to a dwelling unit earning IAP certification. While it was noted that “dry mode” has its disadvantages since it is often a manually operated function (not automatic) and may still provide cooling when it is not needed, the current text does allow either re-heat function to maintain indoor temperature setpoints or the option to turn off the dry mode before reaching the RH setpoint. Additionally, buildings in CZ4 are still eligible to use the exemption based on RH modeling, which is provided by the same energy rating software used to calculate an energy rating index in accordance with ANSI 301-2019 or 2022. The phrasing of the

exception has been simplified to allow design teams to provide the infrastructure for a future dehumidification system, without needing the RH modeling results.

The EPA agrees that both the ductless dehumidifier and a central system with an added coil for dehumidification would meet the intent of Item 4.2.2 and has revised the requirement accordingly.

While the EPA appreciates the suggestion to add a requirement for accessible controls where humidifiers will be installed, that requirement has not been added.

Item 4.2.3

Note: This item was moved from Item 1.6. See Items 1.6 and 1.6.2 for comments and responses.

Item 4.3 Heating and Cooling (HAC) Duct Systems

Comment Summary:

Three commenters submitted the same proposed change to the building framing cavity exception (E4.3.3) in the Indoor AirPlus specification, in order to limit the use of this exception to only existing homes where the cavities are subject to inspection and additional sealing.

One commenter noted that duct leakage testing to the outside is not required for ENERGY STAR Multifamily New Construction (MFNC), so the language in both specifications should be clear in Item 4.3.8 if this test is intended to be required for multifamily dwelling units for Indoor AirPlus.

One other commenter supports duct leakage testing as a requirement for each labeled home, indicating that they are not supportive of the current allowance for sampling.

EPA Response:

Upon re-evaluation of the exception to use building cavities as return ducts, the requirement has been revised such that it is the same in both specifications and the same for both gut rehabilitations and new construction. However, based on the points raised by the commenter, an exception has been added that permits building cavities only to be used as returns if they are also meeting all other requirements for ducted returns.

The EPA agrees that the duct leakage testing to outdoors stated in Item 4.3.8 of the Indoor AirPlus Gold specification is not required for most multifamily units pursuing ENERGY STAR MFNC Certification. In addition, due to the requirements stated in Item 4.4.2, ducts will not be located outside the pressure boundary, further reducing the need for this testing requirement to be repeated in the Gold specification. However, due to the IAQ impacts of duct leakage of those ducts when they are located outside the pressure boundary, multifamily dwelling units will be required to test duct leakage to outdoors, unless specifically exempted. Item 4.3.8 in the specification still applies to all dwelling units, single-family and multifamily, unless stated otherwise. Based on comments related to non-ducted returns in the previous item, the language in this section has been revised to clarify the test procedures.

The EPA appreciates the feedback from the commenter regarding the allowance to use sampling for test results in homes pursuing IAP certification. Sampling is intended to be phased out for townhouses, single-family homes, and two-family homes, in alignment with other EPA and DOE residential new construction programs.

Item 4.4 Location of Heating and Cooling (HAC) Air-Handling Equipment and Ductwork

Comment Summary:

A commenter recommended referencing ANSI Standard ANSI/IICRC S590, which includes information on assessing HVAC systems following a water, fire or mold event, but did not suggest how that could be used as the basis of a new requirement.

EPA Response:

The EPA appreciates the information on the ANSI Standard; however, no requirement has been added to either specification to require HVAC assessments in accordance with the standard.

Item 4.4.1

Comment Summary:

One commenter suggested guarding against 'situations where builders put a closet in the garage to house the AHU, then a door into the garage from the closet'. In contrast, another commenter questioned the reason to exclude this design practice given the value of locating the AHU in a very accessible place for maintenance and filter replacement.

EPA Response:

The EPA recognizes that it is common practice to place air handlers in closets accessible from the garage. Due to the inherent benefits of that accessibility, Indoor AirPlus will allow that practice with requirements to limit air transfer including self-closing hinges and a well-sealed, insulated door.

Item 4.4.2

Comment Summary:

A commenter requested that the EPA confirm the exceptions for ducts in conditioned space are aligned with Zero Energy Ready Homes (ZERH). Another commenter indicated that requiring ducts to be located in conditioned space was a significant change "and although some markets are shifting to high performance ducts systems and attics, nationally we still see a wide range of strategies that may not comply with the items proposed" and "would eliminate the ability to participate in this program."

EPA Response:

The EPA agrees that the exception for locating ductwork inside the thermal and air barrier boundary should align with ZERH and has aligned the requirements with the ZERH Version 2 program documents. The Indoor AirPlus Gold specification does include two additional exceptions that are not permitted in ZERH. The EPA recognizes that for some builders, locating ducts and air-handlers in conditioned space may pose a challenge. For this reason, this is a recommendation but not a requirement for the Certified tier.

Item 4.5 Pressure Balanced Bedrooms

Comment Summary:

One commenter requested that the EPA confirm the requirement is aligned with ENERGY STAR.

Another commenter provided comments based on her IAP labeled homes indicating that some requirements are not being fully executed in the field and requested that the EPA provide more training to builders, contractors, and inspectors to ensure that all requirements are being met consistently across labeled homes.

EPA Response:

As previously drafted in Item 4.5.1, the Indoor AirPlus specifications were intended to maintain the same IAP requirements for bedrooms regardless of whether they were in a single-family home or a multifamily apartment or condo, which was not fully "aligned" with ENERGY STAR requirements. However, the EPA acknowledges this may create some confusion amongst partners and has simplified the requirement such that in all cases, satisfying ENERGY STAR pressure balancing requirements also satisfies IAP requirements.

The EPA appreciates the requests for additional training and will be requiring IAP Version 2 training for both builders and Verifiers as described in the National Program Requirements.

Item 4.6 Dwelling-Unit Mechanical Ventilation

Item 4.6.1

Comment Summary:

Item 4.6.1 requires a dwelling unit mechanical ventilation system, and in the gold specification this system must additionally be “balanced”. Multiple comments were submitted requesting clarification of the stated requirements, advisories, and notes. One commenter requested references to ASHRAE 62.2 ventilation rates that the system is required to provide, which is not stated until 4.6.5. One commenter suggested specific definitions would be helpful. Another commenter asked if “an exhaust fan driven system with a passive makeup air duct qualifies as balanced”. Another commenter asked to clarify Note N4.6.1d, which requires simultaneous operation of the AHU and supply air systems when they are connected to the HAC distribution system.

Other comments requested more stringent requirements related to the dwelling unit mechanical ventilation systems. Two commenters indicated that “balanced ventilation” should be required in the Certified tier. Another commenter suggested that exhaust-only ventilation should not be permitted in the Certified tier, but also noted that “well distributed ventilation is more important than balanced”. The same commenter suggested that the Gold specification include requirements for heat or energy recovery. Another commenter submitted a similar comment, but with some exceptions based on home size and climate zone. They also suggested revising the definition of “balanced” to clarify that it allows the difference in airflow to be the greater of 20% and 10 CFM, and to also require simultaneous operation when separate supply and exhaust systems are used.

EPA Response:

The EPA appreciates the feedback on specific revisions that would better clarify the intent of the program requirements. In response to the question raised about “passive” systems, it is the EPA’s intent that those do not qualify because they do not provide “mechanical supply”. In response to the other requests for clarification, Note N4.6.1.d has been revised to remove “HRV/ERV” and to further underscore that simultaneous operation is required, to ensure the outdoor air can be distributed beyond the HAC system, into the conditioned space.

While the EPA appreciates the suggestions to increase rigor with respect to the requirements for dwelling unit mechanical ventilation systems in both tiers, Verifiers and builders have also commented that the current requirement in the Gold specification is already a potential barrier to participation. In addition, while the EPA believes in the IAQ benefit of balanced ventilation over other ventilation systems, changes are not being adopted to require simultaneous operation of separate exhaust and supply systems. While the EPA understands the energy savings associated with H/ERVs, the requirement for balanced systems is intended to improve overall pressure balances in the building and to provide enhanced distribution of ventilation air, which might be achieved regardless of the system’s potential energy recovery. As such, the recommendation to require H/ERVs has not been adopted. The definition of “balanced” has been revised as recommended by the commenter, and the note recommends simultaneous operation to maintain flexibility among various systems.

Item 4.6.2

Comment Summary:

Item 4.6.2 requires all dwelling unit mechanical ventilation systems to have a manual override, to shut off the supply of outdoor air in the event of poor outdoor air quality. This override should be accessible to residents or to the building staff. One commenter suggested that the costs of these controls would be too much and did not understand what the controls would look like in practice, especially in a multifamily dwelling unit. Another commenter agreed with the intent but thought “accessible” warranted a better definition and that the label should be expanded to explain the function of the system and the override. A final commenter suggested that there are downsides to requiring manual override, such as the occupant never turning the system back on and systems in multifamily buildings being operated differently, causing pressure imbalances.

EPA Response

The EPA has revised the requirement to better reflect the intent and the types of controls permitted.

Although there may be disadvantages to requiring a manual override, the EPA acknowledges there will be outdoor conditions that warrant the temporary pause in operation of ventilation systems.

Item 4.6.4

Comment Summary:

One commenter suggested adding an exception to the minimum separation distances required between outdoor air (OA) intakes and known contamination sources, which would permit factory built combined intake/exhaust termination fittings similar to an exception permitted by ASHRAE 62.2 and the 2021 IMC.

EPA Response:

The EPA has revised this requirement to provide more flexibility in locating OA intakes where research indicates that IAQ risks are minimal from the standpoint of exhaust re-entrainment in the OA intake. As such, a minimum separation distance of 5 ft. between dwelling unit exhaust outlets and dwelling unit OA inlets is allowed. While the exception for certain combination terminations as proposed by the commenter was not adopted, the alternative currently allowed by ENERGY STAR for ERVs and HRVs to have smaller separation distances, as allowed by the manufacturer, has been added to the IAP requirements.

Item 4.6.5

Comment Summary:

One commenter noted that ASHRAE 62.2 will be publishing their 2022 standards, whereas IAP is only referencing 2019. One commenter expressed support for the reference update to the 2019 edition of the ASHRAE 62.2 Standard, as compared to the previous version of Indoor AirPlus that referenced ASHRAE 62.2-2010. The same commenter also expressed concern with the program referencing a standard that intentionally establishes ventilation requirements that achieve a “minimum” level of IAQ. While no change was specifically proposed to 4.6.5 to address this concern, the commenter provided recommendations within other items where better ventilation practices should be considered as requirements in Version 2. Another commenter expressed concern that listing the required ventilation rates in 4.6.5 rather than earlier in 4.6.1 could be misleading. Another commenter requested clarification on the testing tolerance of the equipment used to measure airflows. The final commenter suggested adding the term “third-party” to the language that permits a Verifier to use measured airflows from a “certified air-balancing contractor”.

EPA Response:

The EPA agrees that ventilation rates should be mentioned sooner in this section and has revised both specifications accordingly. While the EPA appreciates the request to clarify testing tolerances, Indoor AirPlus will continue to reference current ventilation testing standards (e.g., ANSI 380) for those tolerances. The EPA also agrees that the addition of “third-party” is an improvement to the allowance. While the EPA appreciates the feedback that a more current edition of ASHRAE 62.2 standard could be referenced, the EPA believes the incremental updates from ASHRAE 62.2-2010 to ASHRAE 62.2-2019 are reasonable advancements for current program partners and still represent an improvement over current building practices. The EPA will continue to assess the landscape of ventilation practices adopted in the market, along with stakeholder concerns of referencing the “minimum” standard for ventilation as purported by current and future versions of ASHRAE 62.2.

Item 4.6.6

Comment Summary:

One commenter submitted positive feedback on requirements for the filtration of outdoor air. Three commenters suggested that the minimum should be MERV 13, even in the Certified tier. In contrast,

two commenters cautioned against adding this requirement given that they were uncertain if these filters were available for the ERV they typically install. Another commenter stated that “the filtration requirement may have a significant impact on homebuyer experience and energy efficiency as the higher filtration requirement would limit airflow, impact static pressure, and would likely require many HVAC redesigns. This may in turn impact HVAC sizing which can run counter to current builder and rater initiatives which have focused on properly sizing HVAC equipment for code and Energy Star for Homes compliance.”

Two commenters questioned whether the ISO rating was of equivalent performance as currently stated. One commenter asked whether the EPA had considered the impact of this requirement on Packaged Terminal Air Conditioners and Packaged Terminal Heat Pumps, which often offer outdoor air options and are not currently available with a MERV 11 or 13 filter.

EPA Response:

The EPA appreciates the feedback to increase rigor for this filtration requirement. However, this is a filtration requirement specifically for outdoor air intakes, which is not necessarily required for most codes, standards, and building programs. Filter requirements for ducted and non-ducted systems to filter recirculating indoor air are specified in Items 4.11 and 4.12. Based on the feedback that Item 4.6.6 may pose an unintended barrier to selecting supply or balanced ventilation systems for the Certified tier, the requirement has been revised to require only a MERV 8 filter on the outdoor air intake. For the Gold tier, where balanced ventilation is already required, no change is being made to the MERV 13 requirement. Recent market research indicates that both MERV 8 and MERV 13 filters are readily available for a variety of supply and balanced ventilation systems, including many ERV/HRVs.

Item 4.6.7

Comment Summary:

Item 4.6.7 outlines the sone rating requirements for dwelling unit mechanical ventilation systems. Commenters requested that the exception be expanded to include systems that are not rated for sones such as ERVs, HRVs, and in-line fans.

EPA Response:

The EPA agrees that the exception should be revised, and the specifications have been edited to specifically exempt these systems from the requirement since their sone ratings are not typically available.

Item 4.7 Dwelling-Unit Bathroom Exhaust

Comment Summary:

One commenter asked whether the label in Item 4.7.3 was required for the bathroom exhaust fan when it is paired with an air handler to provide dwelling unit mechanical ventilation. The same commenter stated that they have experienced bathroom fans running continuously during the shoulder seasons in Climate Zone 4A.

EPA Response:

The EPA does intend for a bathroom exhaust fan that is part of the dwelling unit mechanical ventilation system to have its “on/off” control labeled, even when paired with other supply fans. This is to ensure the resident is aware of the dual function, should they choose to disable the bathroom fan.

The EPA recognizes that where humidity sensors are installed in the bathroom, the exhaust fan will run until the sensor in the bathroom no longer senses RH above 60%. While the incoming air will include some moisture vapor from outdoors, this is expected to be generally mitigated with the additional requirements in the V2 specifications, including dehumidification provisions in climate zones with higher latent loads. As an alternative, the specification also permits the options for a timer or occupancy sensor capable of running a minimum of 20 minutes after vacated, regardless of the RH at the end of the run time. However, based on the concerns raised, Item 4.7.4 has been removed as a requirement in the Certified tier and is only required in the Gold tier for improved occupant control.

Item 4.8 Dwelling-Unit Kitchen Exhaust

Comment Summary:

One commenter supported the requirements related to kitchen exhaust, and four commenters suggested increasing the rigor. Suggestions included increasing the kitchen exhaust rates, prohibiting gas stoves, prohibiting downdraft fans for the Gold tier, requiring higher rates for gas stoves, adding measures related to capture efficiency, requiring HVI certified kitchen exhaust fans, mandating demand-controlled kitchen exhaust even in multifamily buildings, and increasing the filtration requirement from MERV 3 to MERV 13 when continuous ventilation is used in multifamily buildings. Conversely, one commenter was concerned about the feasibility of the higher intermittent rates for PHIUS projects, whether it would necessitate make-up air, and how this could work with ERVs. Another commenter suggested that the exception to allow a lower continuous kitchen exhaust rate should have a higher whole-building infiltration rate, rather than the current 0.05 CFM50/sq. ft.

One commenter cautioned that standardization related to advisories for capture efficiency and “smart” controls were underdeveloped and suggested removing that text. They also suggested removing the advisory related to selecting fans rated for airflow at a minimum 0.375 static pressure. They additionally suggested remaining with a continuous 5 ACH metric rather than adding fixed CFM options when determining the minimum continuous exhaust rate allowed for multifamily.

One commenter requested clarification that the continuous exhaust permitted in multifamily buildings must be located in the kitchen itself. Another commenter requested an image to accompany the 45-degree angle requirement. One commenter asked if “demand-controlled systems [are] available as a separate switch.”

EPA Response:

In response to the comments received, the EPA agrees that Indoor AirPlus should encourage kitchen ventilation strategies beyond the minimum rates required by ASHRAE 62.2 and has increased the stringency of the demand-controlled kitchen exhaust requirement that applies to single-family dwellings, two-family dwellings, and townhomes. For the Certified tier, the minimum exhaust rate is increased from 100 CFM to 200 CFM, and for the Gold tier, it is increased to 300 CFM. Given the higher rate, the requirement to test the airflow at a setting rated for less than 2 sones has been removed and replaced with a requirement in both tiers to have at least one fan setting that is rated less than 2 sones, at an airflow of 100 CFM (or higher). While there is no distinction in the minimum rates based on the type of stove used, in the Gold specification, downdraft fans are also no longer permitted, and they are only permitted for the Certified tier if electric cooking is installed. The EPA has retained most of the Advisories under this item, anticipating updates as standards evolve and eventually form the basis of new requirements related to capture efficiency and “smart” controls.

The EPA also appreciates the comments related to the exception allowed for multifamily but has maintained the text in its original form. While the EPA agrees in the importance of IAQ protections across single-family and multifamily sectors, there may be challenges and design limitations to overcome in different housing types, requiring unique solutions for each.

For clarification regarding a “separate switch” in demand-controlled units, the EPA considers “demand-controlled” systems to include both manually controlled systems (e.g. operated with a switch/button), as well as automatic systems activated by conditions. Both types of systems are allowed in the specifications.

Item 4.9 Common Space Ventilation Requirements

Comment Summary:

One commenter suggested adding the term “third-party” to be more specific regarding the air-balancing contractor that is permitted to measure ventilation airflows in common spaces. Another commenter suggested that Item 4.9.1 be more specific, clarifying that air should also not be pulled from other common spaces. The same commenter suggested that with respect to Item 4.9.3, “EPA should stress the need to provide filtration, and that conventional filtration is only removing PM, not VOCs and gases.”

EPA Response:

The EPA appreciates the comments and has incorporated the two edits specific to Item 4.9. To align with updates in Item 4.6.6.1, IAP Version 2 has also reduced the MERV filter requirement in the Certified tier to MERV 8.

Item 4.10 Other Ventilation Requirements

Comment Summary:

One commenter supported the inclusion of central vacuum systems in discussions around indoor air quality and did not oppose the qualification that such systems “shall exhaust to the outdoors at least 10 ft. from ventilation system air inlets.”

EPA Response:

The EPA appreciates the support for the inclusion of the ventilation requirement when central vacuum systems are used.

Item 4.11 Particle Filtration for Ducted Heating and Cooling (HAC) Serving Dwelling Units and Common Spaces

Item 4.11.1

Comment Summary:

One commenter suggested that the language related to sizing for the pressure drop be improved and that MERV 13 should be the requirement in the lower tier. The commenter also suggested adding a requirement for a permanent label to be installed on the door to each filter slot that lists the maximum pressure drop that can be accommodated. One commenter disagreed with only referencing ASHRAE Handbook of Fundamentals for duct sizing of common space systems and also suggested that a 2-inch minimum depth for filter slots apply in the Gold specification to those common space systems.

Some commenters were supportive of the requirement for a 2-inch minimum filter slot for all HAC systems. Others questioned the utility of the requirement, and stressed the focus should be on the filter performance rating.

One commenter suggested that, to fulfill the filter rating requirements, they would have to increase the tonnage for the HAC systems, which would be unaffordable.

EPA Response:

The intent with the filter size requirement was to ensure the ability for a highly rated filter to be used in the HAC system going forward. However, there are many filters rated at MERV 11 or higher that are thinner than the minimum 2 inches and may be the best solution when designing a system, given various factors.

Based on multiple and contrasting public comments on Item 4.11, the EPA has decided to maintain the MERV 11 requirement for the Certified tier and the MERV 13 requirement for the Gold tier for ducted HAC systems but has struck the minimum filter depth requirement. While the EPA generally recommends using a deeper filter for improved performance with less likelihood of static pressure issues, removing the prescriptive requirement allows for HVAC designers to consider numerous factors in system design, including available space in the utility room, the filter depth and rating, and pressure drop across the filter when designing duct systems. No change was made related to the comment referencing the ASHRAE Handbook of Fundamentals, given that the duct sizing for common spaces already allows “ASHRAE Handbook of Fundamentals or other equivalent computation procedure.”

While the EPA appreciates the input regarding labeling, this label is currently a recommendation in A4.11.1b, rather than a requirement.

The EPA does not agree that the only way to design an HAC system to handle a MERV 11 filter is to increase the tonnage of an existing system. There are many in-duct air cleaners that provide the ability for 2-inch or larger filters to allow for deeper pleated filters and reduced pressure drop across the filter.

However, to provide additional flexibility for builders in designing HAC systems, the requirement for the Certified tier provides an alternative to the MERV 11 requirement with a MERV 8 filter supplemented by a stand-alone portable air cleaner. For the Gold tier, a MERV 13 filter is required, or alternatively, a MERV 11 filter supplemented by a stand-alone portable air cleaner.

Item 4.11.5

Comment Summary:

Several commenters noted that the ozone limit represented in this item was mischaracterized as an emission “limit”. One suggested that the airflow setting of the system should be identified in conjunction with the ozone limit.

EPA Response:

The EPA agrees that the results of ozone testing requirements for electronic air cleaners are better characterized as “concentration limits” and has revised the item accordingly.

Item 4.12 Particle Filtration for Non-Ducted HAC Systems Serving Dwelling Units

Comment Summary:

One commenter opined that following the advisory for the Certification tier, or the requirements for the Gold tier, could be a significant barrier for builders of affordable multifamily projects.

Another commenter suggested adding a decibel limit to the air cleaner option outlined in Item 4.12.1.ii.

One commenter recommended that the air cleaner should be “CADR normalized to a standard room size,” as opposed to referencing the AHAM standard in Item 4.12.1.ii.

Two commenters suggested that filtration in a balanced ventilation system might be adequate to serve the filtration need, making it unnecessary to require supplemental filtration in a dwelling unit with no ducted HAC system.

EPA Response:

The EPA understands that the Indoor AirPlus requirements may present unique challenges to buildings of various types. However, the filtration advisory for the Certification tier is not required, and various options are provided to fulfill the requirements for the Gold tier. As one of the three pillars of improving indoor air quality, the role of filtration in an Indoor AirPlus home must remain as health protective as possible while considering available resources, and the EPA believes this balance is achieved with the current requirement. Even though a balanced ventilation system may provide filtration of intake air, the air that is filtered is the outside air as it is supplied to the home. The intent of the requirement in the Gold tier is to provide supplemental filtration for air recirculated within the home.

The EPA has maintained the air cleaner requirements in order to maintain flexibility among filtration options and did not choose to impose further standards or sound requirements.

Item 4.13 Gas-Phase Cleaning Devices

Comment Summary:

One commenter pointed to ASHRAE 62.2 and recommended the specifications to prohibit all gas-phase air cleaners from use in Indoor AirPlus homes.

EPA Response:

The EPA understands the cautionary approach to gas-phase air cleaning devices expressed by the commenter. The technology around air cleaners is quickly evolving, and the EPA wants to support that cautionary approach while also recognizing that some devices help improve indoor air quality without adding harmful secondary pollutants to the indoor environment in the process. Therefore, the EPA has

pointed to its webpage that discusses such issues, so partners may understand the most recent position of the agency on this important topic.

Item 4.14 Microbial Disinfection

Comment Summary:

One commenter claimed that plasma generators have been shown to be ineffective and should not be recommended, and further questioned the utility of UVGI technology, suggesting that mentioning it could “invite misuse.” The commenter also identified an ambiguity that the ozone limitation is unclear whether it is a product specification or measured limit. Two other comments expressed concern over other potentially harmful side effects besides ozone, such as VOCs. One commenter suggested that air cleaners used should meet CARB standards and not generate any ozone. One of those commenters also sought clarification whether air cleaners using HEPA filtration would also need to be tested for ozone generation.

EPA Response:

While the EPA understands the risk in discussing emerging technology with various degrees of risk, the specifications make clear that use of such devices is not required. However, the advisory also acknowledges wide usage of such technology, and so intends to at least place certain boundaries around risks associated with the technology. Additionally, a note has been added to make clear that such technology may not be used in place of particle filtration systems.

Section 5. Pollutant Control

Item 5.1 Combustion Appliances

Comment Summary:

Two commenters suggested eliminating exception E5.1.5.1 allowing masonry heaters defined by ASTM E1602 and section 2112.1 of the 2018 International Building Code.

One commenter suggested not allowing combustion cooktops, ranges, or ovens in IAP homes.

Two commenters suggested that IAP transition away from all combustion-based appliances in favor of all-electric appliances.

Three comments stated that solid fuel wood stoves should not be allowed for IAP or should at least be ENERGY STAR certified or rated.

One commenter wanted “mechanically drafted” to be defined and asked if the EPA considers an inducer fan to be “mechanically drafted.”

One commenter suggested that the proposed requirement for a “permanently affixed tempered glass front . . .” in Item 5.1.2.1 is unnecessarily restrictive, considering other applicable glass door assemblies (e.g. ceramic glass, not permanently affixed). The same commenter also noted that Section 3.8 of UL 1482 does not exist.

One commenter suggested that air quality sensors should be mandatory.

EPA Response:

The EPA recognizes that there are relatively few applications of masonry heaters being installed in the market. Coupled with limited standards to apply for design and verification of masonry heater installation, exception E5.1.5.1 was removed. Solid fuel burning appliances are permitted to support cold climate situations with unstable power grids where back-up heating may be required. Such appliances must bring combustion air directly from the outside, be properly vented, and the dwelling must comply with the CO alarm requirements. An advisory for a PM 2.5 monitor was also added ([Low-Cost Air Pollution Monitors and Indoor Air Quality | US EPA](#)).

The wording of Item 5.1.3 was changed to read: “No unvented combustion appliances other than cooktops, ranges, or ovens are located within the building’s pressure boundary. (See Item 4.8.1 for range and kitchen exhaust ventilation requirements.)”

The EPA considers an inducer fan as a component of a “mechanically drafted” system and recognizes the definition of “mechanical draft system” in 2021 IRC Section R202:

A venting system designed to remove flue or vent gases by mechanical means, that consists of an induced draft portion under nonpositive static pressure or a forced draft portion under positive static pressure.

The EPA agrees the previous language in Item 5.1.2.1 was unnecessarily restrictive and has updated the requirement to “Liquid or gas-burning fireplaces shall have an affixed glass front or gasketed door.”

The EPA removed the reference to section 3.8 of UL 1482 and changed Item 5.1.5.3 to read, “Wood stove and fireplace inserts are tested to meet the safety requirements of UL 1482, AND they shall meet the emission requirements of the EPA’s New Source Performance Standards for new residential wood heaters. See: <https://www.epa.gov/residential-wood-heaters/final-2020-new-source-performance-standards-residential-wood-heaters>.”

The EPA recognizes low-cost monitors are helpful when used indoors as a complementary tool to traditional indoor air quality (IAQ) best practices of pollutant/source control, ventilation and supplemental air cleaning/filtration. However, the accuracy, precision, and long-term reliability of the available consumer-grade sensors and monitoring devices are not yet standardized. While the EPA provides guidance on low-cost air pollution monitors, these devices are not currently required for Indoor AirPlus certification.

Item 5.2 Carbon Monoxide Alarms

Comment Summary:

Two commenters asked for clarity whether CO alarms are required in homes and units without combustion appliances installed. Additionally, two commenters stated that in homes and units without combustion appliances or attached garages, requirements for CO alarms are excessive and add a non-negligible expense.

One commenter suggested allowing exceptions for rehabs to permit alarms with 10-year batteries.

EPA Response:

Based on stakeholder feedback and review of relevant codes, Item 5.2.1 has been updated to limit the requirement for carbon monoxide detection to dwelling units with combustion appliances or an attached garage, in harmony with the 2021 IBC Section 915 and the 2021 IRC Section R315. The EPA has also included a note (N5.2.1b) to ensure CO alarms/detectors are protected from contaminants, wherever they are installed prior to construction finishes.

The EPA recognizes that some jurisdictions may provide allowances for non-wired (battery-only) CO detection for projects considered to be “alterations and repairs”. However, at this time Indoor AirPlus will continue to require hard-wired CO detection for gut-rehabilitated buildings seeking certification.

Item 5.3 Pollutant Control from Smoking and Vaping

Comments(s) Summary:

Three commenters commended the education component regarding the impact of smoking, but suggested requiring a smoke-free building option, particularly for multifamily buildings, and including signage stating that the building is smoke-free.

One commentor suggested that the smoking and vaping prohibition for multifamily buildings be broadened to include buildings with two or more units, even if the units are not attached.

One commenter suggested making Advisory A5.3a a requirement.

One commenter suggested Indoor AirPlus extend the smoking and vaping prohibitions to detached housing, not only multifamily structures.

EPA Response:

The EPA continues to encourage smoke-free multifamily buildings in Item 5.3.2. The requirements prohibit smoking and vaping in indoor common areas require posting the prohibition in a prominent entryway or lobby and require the prohibition to be included in rental or lease agreements with provisions for enforcement. Item 5.3.3 requires designated smoking areas, where provided, are located at least 25 ft. from entries, outdoor air intakes, and operable windows, and signage is provided to identify the designated smoking area. Advisories A5.3a and A5.3b provide further recommendations for building owners to prohibit smoking and vaping throughout the entire building. The EPA will continue to assess the feasibility of making this a full requirement in the future.

Prohibiting smoking in owner-occupied buildings would not be possible to monitor or maintain, so the EPA will not require a smoking prohibition in IAP single family homes.

Item 5.4 Pollutant Control through Minimized Infiltration

Comment Summary:

One commenter stated that achieving a 3 ACH50 infiltration level will be difficult or costly to achieve and suggested using a range of foundation types with related variable targets.

One commenter stated that the 0.23 CFM₅₀/sq. ft. would be difficult to achieve for the Gold tier, have little value beyond 0.30 CFM₅₀/sq. ft., and suggested that the limit should instead be set to 0.30 CFM₅₀/sq. ft., which is consistent with ENERGY STAR MFNC requirements. Another commenter similarly thought the 0.23 CFM₅₀/sq. ft. was too stringent and suggested 0.27 CFM₅₀/sq. ft. which would be 10% better than ENERGY STAR. In contrast, one commenter proposed making the requirements even more stringent to match ASHRAE 62.2 requirement of 0.2 CFM/sq. ft. for multifamily and meet the IECC requirement of 3 ACH50 for single family dwellings.

Another commenter requested an ACH50 value for detached homes that are less than 1,000 sq. ft., rather than the currently proposed CFM₅₀/sq. ft. One commenter (0011) questioned the higher sampling rate of 20% that applied to units adjacent to garages but not for other conditions, like top floor units.

EPA Response:

Since states that require compliance with the 2018 IECC specify a leakage rate of 3ACH50 or better, the EPA believes that achieving that level of tightness is a reasonable requirement for all foundation types in homes achieving Indoor AirPlus GOLD certification.

The EPA appreciates the input on the stringency of the air tightness values. Because pollutants from outdoors and adjacent dwelling units can have adverse effects on occupant health, IAP intends for dwelling units to meet reasonable targets for air infiltration. The EPA recognizes there is a necessary balance between health protection, achievability, and available resources; but that the proposed targets are achievable for high-performance builders. While no changes were made to the leakage rate targets for the Certified tier, in response to comments, the value for the Gold tier was increased from 0.23 to 0.25 CFM₅₀/sq. ft. for detached dwelling units ≤ 1,000 sq. ft. and all other attached dwelling units. While the EPA recognizes this is still an increase beyond ENERGY STAR MFNC requirements, energy codes and IAQ standards are quickly moving to tighter values. ASHRAE 62.2-2022 already requires 0.20 CFM₅₀/sq. ft. and the 2024 IECC will require 0.27 CFM₅₀/sq. ft. The current requirement can also be met using an average of the tested values, which offers some additional flexibility.

An ACH50 metric is not being added for detached homes that are less than 1,000 sq. ft. The intent behind allowing the CFM₅₀/sq. ft. for these smaller homes was to acknowledge the inherent challenges faced by small homes with meeting air leakage allowances that are volume based (ACH50) rather than based on surface area. The ACH50 metric used for larger detached homes would be more difficult to meet than the current proposed metric, so no changes were made to that requirement.

With regard to sampling, the increased sampling rate was adopted from ENERGY STAR MFNC, where the EPA had concerns that the current sampling protocols could result in none of the units adjacent to

the garage being tested for air leakage. Since this poses a greater potential IAQ risk than other unique configurations, like top floor units, only these units are being subjected to a higher sampling rate.

Item 5.5 Attached Garages and Parking Structures

Comment Summary:

One commenter asked for clarification regarding whether Item 5.5.1 “is required for dwelling units located on top of elevated slabs over parking garages or only those units that are located on the same floor as the parking garage” and if Item 5.5.1 applies to one- and two- family buildings and townhouses. The commenter also questioned if the 20% mentioned in 5.4 would then require 20% of all townhomes to be tested, if they are adjacent to their own personal garage.

One commenter stated that some multifamily apartments with “tuck-under” garages were not currently subject to Item 5.5.2 as written and that it would be a good requirement for those units as well.

Another commenter suggested that when allowing verification of the garage-to-house air barrier with a pressure differential, the EPA should prohibit the use of exhaust-only ventilation for the Gold tier.

One commenter asked whether the advisory for the Certified tier for automatic closers on doors to the garage should be a requirement.

EPA Response:

The Item 5.5.1 requirements apply to all unit types, whether the garage is adjacent to the occupied space vertically or horizontally. While Item 5.4.1.2 states that only 20% of units adjacent to garages should be tested, that requirement is only for multifamily buildings where sampling is permitted. Given that sampling is no longer permitted for single-family, two-family, or townhouses, all townhouses are required to be tested for airtightness, regardless of the presence of a garage.

The EPA agrees with the commenter that one- and two- family dwellings and townhouses with an attached private garage should be subject to Item 5.5.2 and revised the language accordingly. Provisions for multifamily buildings with a shared parking garage have been added to both Certified and Gold tiers in IAP Item 5.5.3.

Exhaust-only ventilation is not permitted for dwelling unit ventilation for the Gold tier, so no changes were made to the option of verifying the garage-to-house air barrier with a pressure differential.

After further stakeholder input, the EPA determined that the requirement for an automatic door closer created various implementation challenges, is already addressed by building code in some cases, and did not warrant inclusion in the verification requirements. The text was therefore removed from the Advisory for the Certified tier and from the requirement for the Gold tier.

Item 5.6 Combustible Fuels

Comment Summary:

One commenter suggested that the list of combustible fuels in Item 5.6 should be expanded to include solvents and volatile organic substances.

EPA Response:

The EPA recognizes that solvents and volatile organic substances can be highly flammable, but a complete list of substances would be beyond the scope of the Indoor AirPlus specifications. No changes were made to this requirement.

Section 6. Building Materials

Section 6 Overall

Comment Summary:

Multiple commenters recommended Indoor AirPlus to reference third-party labels that identify products compliant with this section, citing the significant challenge that would incur if building materials needed to be researched for each instance of use. Those commenters cited the supplement used with the current version of IAP. One commenter listed a few examples of potential labels to reference, while others suggested a reciprocal system where products that were compliant with other recognition programs could in turn presume compliance with Indoor AirPlus.

Another commenter cited challenges with the verification of low-emitting products, recommending verification take place on an annual basis or upon community launch.

One commenter identified formaldehyde as a pollutant that should be explicitly addressed in this section.

EPA Response:

The EPA agrees that a supplemental document that helps builders identify products with certain labels as compliant with Indoor AirPlus can be a valuable tool. As indicated in the previous draft specifications, the “How to Find Indoor AirPlus Compliant Low Emission Products” document was updated to identify products that are compliant with these specifications, including the identification of product certification and labeling programs that are acceptable. As mentioned in the previous comment response from February 2023,

“usability is especially important for program compliance, so builders can easily select proper low VOC products. As such, EPA intends to update the supplemental guidance, How to Find Indoor AirPlus Compliant Low Emission Products, which provides information on identifying products that are compliant with these specifications. ... EPA recognizes that listing a variety of third-party certifications in the specifications creates requirements with various levels of stringency. The proposed draft intends to improve consistency by referencing foundational standards for both VOC content and emissions, upon which supplemental guidance materials will be based.”

This document was revised and is now titled, “Indoor AirPlus: How to Find Compliant Building Materials.” However, although many third-party labels that address low-VOC products incorporate the same emission standards outlined in the Indoor AirPlus specifications, the VOC content of products are evaluated on a more disparate basis. Including both emission and content requirements for building materials may require the builder to conduct their own investigation on each product to ensure compliance with the content requirements, defeating the intended purpose of streamlining acquisition and verification of compliant materials. While VOC content standards may have benefits for both outdoor and indoor air, the impact of indoor air quality from building materials is largely dependent on what compounds are actually being emitted from that product. Therefore, to improve program impact and adoption, and to focus the specifications on emissions standards that have the biggest impact on indoor air quality, the VOC content requirements have been removed from Section 6.

Although many products that are compliant with other specifications may also be compliant with Indoor AirPlus, to maintain consistency among products used, the program will not abrogate responsibility by reciprocating compliance of products with other recognition programs.

The EPA agrees that it would be impractical to require that each individual building material used throughout the construction process be verified. In response, the specifications have been revised to be more explicit that verification of compliance with this section may occur using records provided to the Verifier from the builder, documenting the specific products that will be used throughout the home/building. The Verifier must confirm the products listed in the record meet the requirements of this section. The builder is responsible for notifying the Verifier of any product substitutions that occur through the course of construction/development and providing the Verifier with documentation for re-verification and retention. Documentation may be provided to the Verifier once for multiple homes in a specific development or community project (or for multiple units in a multifamily building). Such records

may include but are not limited to a cut sheet, purchase order, or corporate-wide declaration or sales agreement, documenting the product selection(s) for the specified development/community.

While the EPA agrees that the control of formaldehyde emissions from building materials is an important consideration, the agency believes this concern is adequately addressed in the EPA's "Formaldehyde Emission Standards for Composite Wood Products."

Item 6.1 Composite Wood

This item did not receive any comments.

Item 6.2 Interior Paints, Finishes, and Coatings

This item did not receive any comments.

Item 6.3 Carpets and Cushions

This item did not receive any comments.

Item 6.4 Adhesives and Sealants

This item did not receive any comments.

Item 6.5 Hard Surface Flooring

This item did not receive any comments.

Item 6.6 Gypsum Board

This item did not receive any comments.

Item 6.7 Insulation

This item did not receive any comments.

Item 6.8 Asbestos

Comment Summary:

Commenters expressed concern that Verifiers may not be qualified to inspect homes for asbestos and could be open to liability. The recommendation is to require an asbestos inspection by a qualified inspector for any homes undergoing gut rehabilitation, and any asbestos found should be mitigated. This can also be achieved with documentation of a previous inspection and mitigation plan.

EPA Response:

Asbestos remains an important consideration during gut rehabilitations, and builders must remain vigilant to avoid the severe health risks associated with asbestos exposure. However, Indoor AirPlus Verifiers should not find themselves in a paradoxical situation where verifying Indoor AirPlus requirements could place them in conflict with state and local regulations that require services related to asbestos to be conducted by a certified service provider. Therefore, the requirement that Verifiers visibly inspect all accessible areas for possible asbestos containing materials has been removed. A note has been added to the beginning of this section to stress the importance of the issue and to encourage IAP partners to address any questions to state and local authorities.

Item 6.9 Lead-Based Paint

Comment Summary:

One commenter expressed support for this item, declaring it to be an "important addition" for gut rehabilitations.

Other commenters recommended that the section require an assessment by a certified professional and a mitigation if required, for all buildings built before 1978. The commenters expressed concern that the section could place liability on the Verifier.

EPA Response:

The requirement as previously proposed does, in fact, require assessments by “a certified inspector or certified risk assessor,” and for any mitigation to be conducted according to lead-based paint regulations. However, the intent of the Indoor AirPlus program is to provide a way for builders to go above and beyond minimum requirements already established by code and other regulations. The EPA believes in the case of gut rehabilitations undergoing Indoor AirPlus certification, the risk of creating a hazardous condition from lead-based paint is already addressed with preexisting federal, state, and local requirements during renovation, repair, and painting activities in homes built before 1978. Therefore, the requirement for an inspection or risk assessment was removed, and a note was added reminding IAP partners of their obligation to follow rules and regulations pertaining to lead-based paint on applicable projects.

Section 7. Occupant Education

Section 7 Overall

Comment Summary:

One commenter noted that homeowner information kit should specify the location of equipment and service frequency notes with additional details for regular seasonal maintenance of systems. Another commenter requested a “maintenance checklist” for the homebuyer, citing efforts to gain awareness on how to “continue to maintain the systems that are part of our Indoor AirPlus home.”

EPA Response:

As indicated on page two of the verification requirements, the EPA agrees that “regular maintenance of mechanical systems” is an “important factor that impact[s] IAQ.” Builders are in a unique position to provide important information to inform proper maintenance methods and schedules. Since the delivery and use of this information may be different in the single-family and multifamily sectors, the EPA has revised Item 7.1 to require both instruction manuals (Item 7.1.1) and operations and maintenance recommendations (Item 7.1.2) be provided to “occupants, building owners, or property managers.

Comments and Responses to Closing Section

No comments were received on closing sections of the specification (Abbreviations and Acronyms, References, and Climate Zones of the United States).