Indoor airPLUS Version 2 Executive Summary

These draft specifications and associated program structure were developed by the U.S. Environmental Protection Agency (EPA) to certify and label residences in single-family and multifamily buildings, inspected for their indoor air quality (IAQ) features and benefits. They were developed based on the best available science and information about risks associated with IAQ problems, balanced with practical issues of *feasibility* in construction or rehabilitation, *affordability* in a diverse marketplace, and *verifiability* by qualified professionals in the home performance and rating industries. As a result, the Indoor airPLUS certification label represents value-added marketability that builders can use to distinguish themselves from competition, while homeowners see increased comfort and a healthier and safer home with improved indoor air quality.

Development of Indoor airPLUS Version 2

The Indoor airPLUS Program originally grew from the ENERGY STAR Certified Homes Program, and the first Indoor airPLUS Construction Specifications (Oct. 2008) built upon the pre-requisite of ENERGY STAR certification and were applicable to new construction or substantially rehabilitated ("gut rehabilitation") projects in single-family and some multifamily properties (5 stories or below). In December 2020, EPA published a draft of its first major proposed program change since 2008, including advanced IAQ requirements and the opening of eligibility to multifamily buildings of all heights.

Public feedback reflected a range of perspectives about the proposed specifications and the direction of the program. Some stakeholders suggested that Indoor airPLUS should further increase the rigor on a number of IAQ protections initially proposed (e.g., radon testing requirements; ozone threshold values for air cleaning equipment, etc.). Alternatively, other stakeholders felt that the proposed specifications may increase cost and negatively impact affordability and program participation at a time when Indoor airPLUS is gaining momentum and market recognition.

In response to this important stakeholder feedback in the first round of public comment, the newly proposed Indoor airPLUS program model intends to address those various industry perspectives with revised specifications and a draft certification system that introduces a tiered set of certification requirements for two distinct labels. As previously proposed, Indoor airPLUS Version 2 would still be applicable to newly constructed or gut-rehabbed properties in residential buildings of all heights. However, the tiered system at the "base" Certification level intends to increase broader program participation with builders and developers entering the high-performance home market, while also accelerating adoption of basic strategies to improve IAQ in the affordable housing sector.

Addressing Affordability

EPA continues to weigh valuable stakeholder feedback and recognizes the challenge of increasing *IAQ protections* while also continuing to increase *program participation*. As a voluntary program, EPA must be mindful of the added cost to build an Indoor airPLUS home while also striving to push the market forward in adopting practices to incrementally improve indoor air quality. At the same time, the integrity of the Indoor airPLUS program must be protected to ensure the value-added marketability of Indoor airPLUS homes and the maximization of increased indoor air quality across the spectrum of new housing stock. EPA is also dedicated to Environmental Justice in all aspects of its work, both regulatory and voluntary. Addressing affordability and creating opportunities for disadvantaged communities and populations to access safe, healthy housing are key concerns for the agency, factoring into program policies and strategies, including the development of Indoor airPLUS Version 2.

While EPA is excited to see a growing interest in indoor air quality and the adoption of the Indoor airPLUS program in new *market-rate* homes, EPA's Indoor Environments Division is also devoted to advancing health protections in *affordable* housing. With that aspiration, Indoor airPLUS Version 2 intends to be a model that not only improves IAQ in new, entry-level homes, but also stimulates healthy home improvements in the sector of gut rehabilitations. The revised requirements more directly address inspections for IAQ protections in *all* building types. This program model seeks to encourage affordable housing developers to include IAQ and durability assessments of their buildings with certified verification professionals, ultimately adding important health protections for underserved occupants by earning the Indoor airPLUS label.

Performance-Based and Outcome-Based Approaches to IAQ

With the growing public interest in health and wellness and the emergence of low-cost IAQ sensors, EPA recognizes opportunities for more performance-based approaches to assessing residential IAQ. As standards for IAQ sensor technologies emerge, and as research continues to establish science-based metrics for indoor pollutants, EPA intends to encourage the adoption of IAQ monitoring technology in the Indoor airPLUS Program, recognizing that occupant education and awareness are critical aspects of maintaining a healthy home.

As IAQ monitoring is improved and standardized, more performance-based approaches may continue to be adopted in these and future program revisions. However, Indoor airPLUS also still includes numerous prescriptive requirements for features that promote source control, ventilation, and filtration—fundamental strategies for improving IAQ. EPA recognizes that many IAQ features are easier to implement during new construction (e.g., foundation waterproofing and exterior moisture management practices). Nonetheless, many buildings undergoing gut rehabilitations may have comparable *features* and/or intended *outcomes* that were not verified at initial construction but may still be inspected by qualified verifiers to assess risks, apparent failures, and/or compliance with such specifications. The Version 2 program model utilizes a combination of prescriptive-, performance-, and outcome-based verification requirements to improve IAQ protections and earn an Indoor airPLUS label.

Strategies to Improve IAQ Protections in a Tiered Program Model

The proposed Indoor airPLUS Version 2 specifications intend to address strategies to improve IAQ with inspection requirements in newly constructed and/or gut rehabilitated buildings, while balancing unique considerations of feasibility and affordability in these residential building types. The proposed base tier, referred to as the "Indoor airPLUS Certification Specifications", does not include a pre-requisite ENERGY STAR certification as required in Indoor airPLUS Version 1. However, EPA's ENERGY STAR Residential New Construction programs include many complementary and/or overlapping features to help protect new homes and buildings from moisture management and durability risks. Many of these basic strategies to improve moisture management and durability will continue to serve as pillars in EPA's ENERGY STAR Residential Programs, as well as a stepping-stone to achieve higher tiers of home performance.

The proposed Version 2 "Indoor airPLUS Certification Specifications" continue to offer advancements beyond Indoor airPLUS Version 1 in important IAQ protections and performance-based approaches (e.g., radon testing, humidity monitoring, etc.), while some requirements that are more challenging to implement in affordable housing and gut-rehabs are reserved for a higher certification tier.

Enhanced IAQ and Energy Efficiency with Indoor airPLUS Gold

Along with this new model and the "Certification" tier focused on IAQ fundamentals, EPA is proposing a higher tier of certification, tentatively titled "Indoor airPLUS Gold". The "Indoor airPLUS Gold Specifications" would be available only for projects eligible under ENERGY STAR Single Family New Homes or ENERGY STAR Multifamily New Construction programs. The "Gold" tier would include ENERGY STAR certification as a pre-requisite plus additional IAQ requirements, many of which were proposed in the first round of public comment for Indoor airPLUS Version 2. EPA believes the creation of a "Certification tier" and "Gold tier" will help address recent stakeholder input and EPA interests, encouraging broader participation in the entry-level new homes market and affordable sectors, while also continuing to push the market toward innovation and high-performance construction practices demonstrated by leading builders. With ENERGY STAR certification as a prerequisite for the Indoor airPLUS Gold label, builders are encouraged to improve not only durability and IAQ features, but also energy efficiency and long-term carbon reductions achieved with the ENERGY STAR label.

Verification Process

The certification process proposed for homes and multifamily units under Indoor airPLUS Version 2 is similar to Version 1, with rating companies providing verification services, either with or without other program certifications. The program requirements in effect at the time of building permit would be used for construction/rehabilitation and final verification. While EPA anticipates future changes to the specification, these will be staged to allow partners and the general public ample time to adopt new program requirements, helping to accommodate large or staged projects.

Upon completion, the verifier or rating provider provides an Indoor airPLUS label and certificate for the certified home/apartment. The verifier also retains the Indoor airPLUS checklist and associated certification documentation for a minimum of 10 years.

Oversight and Quality Assurance by Home Certification Organizations

In parallel with other EPA home labeling programs, Indoor airPLUS Version 2 intends to utilize a Home Certification Organization (HCO) model to administer the certification process in the market, including an Application for Recognition for those organizations seeking to become an Indoor airPLUS HCO. The core requirements for such an organization will be similar to EPA's ENERGY STAR and WaterSense programs, with the exclusion of some requirements pertaining to rating and modeling protocols for energy or water efficiency, respectively.

Indoor airPLUS HCOs will be required to develop procedures for the training, credentialing, and listing of verifiers, and to oversee the certification process following the Indoor airPLUS Certification Specifications, Indoor airPLUS Gold Specifications, or both. EPA anticipates that current industry certifications from credentialing bodies such as RESNET and the Building Performance Institute would be viable credentials for Indoor airPLUS verifiers, while other verifier credentials may also exist or emerge in the market. Indoor airPLUS HCOs may apply for recognition in the oversight of certifications for single-family and/or multifamily, new or rehabilitated buildings, or a combination of the above, based on their expertise and network of verifiers. HCOs would likewise be responsible for quality assurance evaluations, similar to those outlined by the ENERGY STAR Certification System, as well as the reporting of labeled homes/units to EPA on a recurring basis. See the draft "Indoor airPLUS Certification System" for more detail on HCO requirements.

Expiration and Re-certification

Under Version 1 of the program, an Indoor airPLUS qualified home has had no specified "expiration date" on the label. Applied upon completion of the home/building, the Indoor airPLUS label has included the verification date associated with final inspection, but not the specific version/revision number. Additionally, while the label has remained on the home in perpetuity, it may offer diminishing value over time. While this approach has helped to incentivize IAQ practices in new construction and/or gut rehabs, there may be missed opportunities to ensure that important IAQ protections remain as the building ages and as occupants turn over. Likewise, as emerging technologies and building science research advance, new opportunities for IAQ risk reduction may be missed if there is no model for reinspection and recertification.

To address these challenges, EPA proposes an expiration date to the Indoor airPLUS certification, which would also be included on the physical label on the home/unit, indicating that a follow-up inspection is required for recertification after 5 years from initial verification. Follow-up inspections for any previously certified home/unit would include the most recent program revisions in place at the time of re-inspection.

Similar to homebuilders seeking initial certification, the home/building owner bears the responsibility of verification costs for the recertification of previously labeled homes/apartments. Photos and/or video documentation from the initial certification are expected and encouraged to be maintained and eventually utilized to streamline the recertification process. Repairs and alterations required for recertification can be made by the owner, a separate contractor, or the verifier who performs the inspections. The verifier is ultimately responsible for ensuring that the home/apartment continues to maintain (or improve) the IAQ protections as initially verified, and that all work performed to correct deficiencies or to address new requirements have been completed fully, correctly, and without bias. Where the verifier performs building alterations or updates to achieve recertification, it is the responsibility of the verifier to ensure there are no conflicts of interest or appearances of conflicts of interest by disclosing all associations and relationships in advance to any stakeholder with a legitimate right to be informed of them. Verifiers are accountable to the Code of Ethics outlined by their respective Home Certification Organization.

Summary

With the intent of advancing IAQ protections and raising standards for high-performance homebuilders, while also seeking to encourage broader participation in the affordable housing sector, Indoor airPLUS Version 2 provides a renewed focus on basic strategies to improve IAQ that can be implemented affordably to further impact vulnerable and disadvantaged populations. As such, EPA is proposing a revised Indoor airPLUS program model for residential homes and apartments, including a tiered certification structure with revised and reformatted specifications, all of which are inspected by qualified verification professionals. Version 2 intends to address important challenges and opportunities in newly constructed and substantially rehabilitated buildings of all heights, while also encouraging long-term maintenance and sustained health risk reductions through re-certification of labeled homes that demonstrate ongoing IAQ protections and advancements.