



Nashville



Terwilliger Center
for Housing

SUSTAINING NASHVILLE

Building Sustainability and Resilience into Affordable Housing

Technical Assistance Panel | June 5–7, 2024



About

Urban Land Institute

Urban Land Institute is a global, member-driven organization comprising more than 48,000 real estate and urban development professionals dedicated to advancing the Institute's mission of shaping the future of the built environment for transformative impact in communities worldwide. ULI's interdisciplinary membership represents all aspects of the industry, including developers, property owners, investors, architects, urban planners, public officials, real estate brokers, appraisers, attorneys, engineers, financiers, and academics. Established in 1936, the Institute has a presence in the Americas, Europe, and Asia Pacific regions, with members in 84 countries.

Cover photo: New housing development surrounding existing housing stock. (ULI)

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ULI Nashville

ULI's mission is at work in Nashville and Middle Tennessee through ULI Nashville's 925+ members—real estate professionals from across the land use industry. Through programming, initiatives, and outreach activities, ULI Nashville members educate and collaborate with fellow community practitioners, stakeholders, decision-makers, and change agents. ULI Nashville's work is driven by three strategies: connecting, educating, and collaborating; pursuing intentional growth; and aligning land use with quality of life. This last strategy drives the work of the 2024 TAP on creating sustainable, resilient, affordable housing.

Technical Assistance Panels

The technical assistance panel (TAP) program is a way for ULI members to assist public agencies and nonprofit organizations, and to give back to their communities. In over 75 years, the Advisory Services program has undertaken more than 700 panel studies on a broad range of issues globally. TAP members combine their individual expertise with the resources of ULI to provide an unbiased, neutral perspective on land use and real estate issues. TAP members are volunteers and receive no remuneration for their time.

ULI Terwilliger Center for Housing

The mission of the Terwilliger Center for Housing is to ensure that everyone has a home that meets their needs at a price they can afford. Established in 2007 with a gift from longtime member and former ULI chairman J. Ronald Terwilliger, the Center's activities include technical assistance engagements, forums and convenings, research and publications, and an awards program. The goal is to catalyze the production and preservation of a full spectrum of housing options.

The ULI Terwilliger Center for Housing through its [Attainable Housing for All Initiative](#) leverages TAPs and other forums to directly engage with local communities, bringing expertise to solve unique affordability challenges and expand the production and preservation of attainable housing. This initiative is possible due to the generous support of Thomas Toomey.

About

Technical Assistance Panel

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Acknowledgments

ULI Nashville and the ULI Terwilliger Center for Housing thank the Metro Nashville Planning Department and the Housing Division in particular for inviting ULI to study the opportunities for encouraging more sustainable and resilient affordable housing development across the city. Additionally, ULI thanks Metro staff, particularly Angie Hubbard, Housing Division Director, for her insights and technical support leading up to and during the process. ULI extends its thanks to the stakeholders who generously shared their time and experience with the panel.



ULI staff, TAP panelists, and Metro Housing Division staff.

Thank you

Sponsor



Stakeholders

Thank you to the following individuals who participated in the stakeholders interviews that helped inform the TAP process. The following individuals represent Metro staff, advocacy and nonprofit organizations, developers (private, public, and nonprofit), public sector leaders, financiers, policymakers, academia, planners, architects, and energy and environmental consultants:

- | | | | |
|-----------------------------------|-------------------------------|--|-------------------|
| Kendra Abkowitz | Hunter Gee | Bob Mendes | Terry Rappuhn |
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| Stephen Bland | Parker Hawkins | Steve Mishu | William Rosenthal |
| Michelle Brown | Hank Helton | Hunter Nelson | Marty Sewell |
| Tracy Buck | Vice Mayor
Angie Henderson | Mick Nelson | Kim Shinn |
| Hal Cato | Edward Henley | Matt Nicholson | Jackie Sims |
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| Greg Claxton | Jeff Hite | Tom Palko | Curtis Thomas |
| Stephanie Coleman | Evan Holladay | Council member
Sean Parker | Aron Thompson |
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Jennifer Gamble | Richie Jones | Council member
Delishia Porterfield | Tiffany Wilmot |
| Katie Rudowsky Garrett | Eric Kopstain | Andrea Prince | Kelsey Wilson |
| | Eddie Latimer | | Kathryn Withers |
| | | | Nora Yoo |



The ULI panel members and Metro staff toured several Nashville neighborhoods and points of interest. Former council member at-large Sharon Hurt provided the panel with additional community insights at the Jefferson Street Gateway to Heritage installation.

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Increased rainfall, storms, and flooding are negatively impacting Nashville’s neighborhoods, with low-income residents disproportionately harmed.



Executive Summary

Nashville's housing needs are a primary concern for the city's civic and elected officials as well as city staff. The growth of the region has created significant pressures on housing affordability, with new market-rate construction often replacing smaller, naturally occurring affordable homes.

Added to the housing challenge is the increasing frequency of extreme weather events, storms, and persistent high temperatures, all of which put residents at risk and place unmanageable pressures on vulnerable populations across the city.

Metro Nashville's Planning Department and Housing Division knows it has a role to play in facilitating, incentivizing, and regulating land use and housing development and seeks

to better understand the tools and resources it could use to catalyze more sustainable and resilient affordable housing development across the metropolitan area.

Metro's Housing Division turned to the Urban Land Institute—the Nashville district council and the Terwilliger Center for Housing (together ULI)—for insights and guidance into shaping a citywide strategy to increase the sustainability and resilience of the city's housing stock.

ULI convened a TAP of nine real estate professionals with the expertise needed to tackle this challenge. With insights into the local market as well as other major metropolitan areas, the panel delivered the following recommendations for Metro's consideration.

Guiding Principles

The [2021 Affordable Housing Task Force Report](#) provided the panel with an important foundation for its recommendations, built around the report's guiding principles of racial equity, innovation, connectivity and accessibility, and resilience. The panel also identified the importance of layering economic and social vitality, systemic benefits, and impact onto these principles to ensure a grounding that centers on people and particularly vulnerable populations.

Recommendations for Metro Nashville Operations

Across Metro Nashville Government, departments are growing and innovating to meet the demands of an evolving city. To have a measurable impact on the city's housing challenge, the panel recommends a **“one mission, one team, and one process”** approach. Progress should continue to be tracked on Metro's [Affordable Housing Dashboard](#) and expanded to include the number of new affordable units built per year and other key performance indicators included in this report, such as permits issued on an accelerated timeframe. The approach requires collaboration and coordination across internal departments and external partners. It should also include a navigator position to help developers advance sustainable and resilient affordable projects through the approvals process. The one-process approach is well underway in Metro and should further leverage the



Housing pressures in Nashville are spurring new development and reducing the inventory of naturally occurring affordable housing. As Metro Housing works to facilitate additional affordable units, it is also focused on incorporating sustainability and resilience features into the city's housing stock—to support the health, safety, and economic resilience of the households living within.

Community, Asset, and Land Use Tool and ensure that Metro has the staff needed to meet the demands of this coordinated effort.

Policy Recommendations

It is critical that Metro push hard for actions that support sustainability and resilience and use policies and incentives as levers to encourage developments that meet or exceed Metro's goals.

- Update [NashvilleNext](#) to include innovative sustainability and resilience practices.
- Use zoning by right to expedite projects that support the community's resilience, sustainability, and affordability targets. Zoning around corridors should be expanded to broaden density allowances and position more residents closer to transit and services. Changing zoning rules or the zoning map requires community and Council engagement. Metro Planning should lead the analysis of appropriate changes and the conversation.
- Rather than site-by-site provision of infrastructure, shift to neighborhood-level infrastructure planning and implementation, with a focus on measures that will help reduce the heat island effect and support improved urban flood management. Consider a pilot to demonstrate ideal neighborhood-scale infrastructure. Although this change will not be easy and will require significant study, investment, and robust stakeholder engagement, its impact on

“

Climate change is arguably today's single greatest threat to our society. Our survival and access to basic needs, such as food, water, and shelter, are being and will continue to be affected by the changing climate.”

—Metro Nashville Climate Adaptation and Resilience Plan

Nashville's future development patterns are significant.

- Expanded mobility infrastructure is key both to improving affordability for households and creating a resilient, sustainable Nashville. The city's upcoming referendum on transit provides an opportunity to ensure that areas around transit hubs are utilized for future housing development. Mobility enhancements should also include reimagining the city's greenways as multimodal resources.
- Use Metro-owned land to demonstrate housing and infrastructure innovations.

Building Performance Recommendations

High energy performance can be achieved by adopting newer energy performance codes, such as the International Energy Conservation Code (IECC). Meanwhile, enhanced resiliency can be attained by implementing updated versions of the International Residential Code (IRC) or International Building Code (IBC).

- Standards for new construction should address the building envelope, equipment (e.g., HVAC), and ventilation and should include smart controls and on-site renewable energy sources where feasible. Moving to the [2021 International Energy Conservation Code](#) or [Phius Passive House](#) standards is also recommended.
- Retrofitting an existing building should start with an assessment of the building's existing energy use and then move on to the sustainability features noted above for new construction, with the addition of upgrades to panels and wiring.
- Metro should require high-performance building standards of affordable housing developments seeking Metro funding or other Metro-controlled incentives.
- Metro should facilitate a review of existing affordable and workforce multifamily housing in order to best prioritize resource allocation to improve the existing housing stock.
- Metro Housing, in conjunction with staff leading sustainability efforts in Metro, should continue convening and

educating stakeholders on sustainable practices, coordinating funding and technical assistance where possible.

- Metro should create preapproved plans that meet Metro’s goals for sustainable and resilient housing, to make the permitting and construction of such housing more efficient.

Incentives and Financing Tools

There are a number of steps Metro can take to support the financing and incentivizing of sustainable and resilient affordable housing. As Metro Housing Division is in the process of creating a Unified Housing Strategy (UHS), the TAP panelists recommend that the UHS consider these tools.

- Incentives could include density or height bonuses for green building activities, preapproved housing plans that meet Metro’s goals and speed through approvals, and process assistance, again to help projects move through approvals faster, reducing

carrying costs and supporting more cost-efficient products. These incentives could be similar to those offered in the [Downtown Code Design Guidelines](#) but not limited to the downtown geography.

- Financing tools could include an expanded Barnes Fund, potential tax abatement, downpayment assistance, or even any one of a number of new funding tools seen at work in other communities as described later in this report.
- Leverage the newly created [Nashville Catalyst Fund](#) to support predevelopment work, fund housing that aligns with mission-oriented private equity, or even provide rent preservation assistance in gentrifying areas.
- Green infrastructure improvements should also be supported and funded at the neighborhood or community level. These projects may be expensive for one developer to tackle, but at a neighborhood scale, green improvements could create widespread positive community benefits.

- Technical assistance and additional federal funding are available, particularly in support of solar panel purchases, installation, and maintenance. Metro is encouraged to facilitate and support grant applications by developers to cover costs relating to these and other sustainability and resilience technologies.

Conclusion

In posing the question of *how affordable housing developments in Nashville could be more sustainable and resilient*, the Metro Housing Division is leading affordable housing stakeholders in considering how housing can provide a foundation of resilience for low-income Nashvillians. It was clear during the stakeholder interviews that, while individual affordable housing developers are adding sustainability features to their projects, the community as a whole has not fully considered how climate change and increasing severe weather events are disproportionately impacting low-income households.

Metro is positioned to lead by example in the areas of resilient and sustainable practices. The TAP revealed an interest in partnerships around this topic across the landscape of neighborhoods, agencies, institutions, and related public sector partners. By uniting around a shared purpose and vision and defining a focused strategy, Metro can lead with a new way of thinking that embraces resilience and sustainable solutions and creates a more livable and attainable Nashville for all.



ULT TAP / ABENA OJETAYO

Introduction and Background

Extreme heat is an increasingly dangerous threat, catastrophic storms are occurring more frequently, and heavy rains are creating disastrous flooding events. Metro Nashville is experiencing all of these weather-related disasters with increasing frequency and civic leaders are eager to find solutions to help better prepare residents to meet these challenges resiliently and sustainably. Many of the solutions lie in Nashville's housing stock and the city's approach to development.

In recent years, significant housing has been built in Metro Nashville, yet a growing proportion of Nashvillians are burdened by housing costs. Elected officials and Metro's planning professionals are aware of the need to include affordable housing in the mix—they have created funding, incentives, and other tools to encourage affordable housing and a growing number of developers are racing to meet the need.

As Metro's response to the affordable housing crisis has accelerated, Metro has set its sights on how the design of housing developments and individual units (both new and existing) that incorporate sustainability and resilience can have a significant positive impact on the future health and vitality of the community and its residents. Many affordable housing developers have incorporated some sustainability features into their developments, yet the practice is not uniformly understood or embraced by the affordable housing development community. Meanwhile, Metro also has opportunities to think strategically about the sustainability and

resilience of infrastructure, which can help the city meet its goals and benefit residents.

To identify policies, tools, and resources that Metro Nashville can use to encourage more sustainable and resilient building practices, Metro Nashville's Planning Department sought assistance from ULI through its technical assistance panel (TAP) program. As a trusted convener and thought leader, ULI convenes TAPs across the country to assist municipalities and other organizations with addressing pressing and often difficult land use challenges and related policy matters.

The Housing Division presented ULI with a series of questions grounded in the work of Metro Nashville's [2021 Affordable Housing Task Force](#) and Metro's [Unified Housing Strategy](#) objectives to increase the sustainability and resiliency of its existing and future affordable housing stock.

To address the questions posed by the Housing Division, ULI convened a panel of real estate professionals with expertise in the areas of development and specifically affordable housing development, sustainability, resilience, and public sector housing and resilience strategies. Through the course of two days, the panel toured several housing sites and met with a wide range of stakeholders, including Metro staff, nonprofit organizations, residents, business leaders, and other related real estate professionals working in the region. With the information from these sessions in hand, the panel applied their professional knowledge and experience to the task, ultimately

Extreme Heat

From the World Health Organization

Heat waves and prolonged excess heat conditions are increasing in frequency, duration, intensity, and magnitude due to climate change. Even low and moderate intensity heat waves can impact the health and well-being of vulnerable populations.

The frequency and intensity of extreme heat and heat waves will continue to rise in the 21st century because of climate change. Extended periods of high day and nighttime temperature conditions create cumulative stress on the human body, increasing the risk of illness and death from heat exposure. Heat waves can acutely impact large populations for short periods of time, often trigger public health emergencies, and result in excess mortality and cascading socioeconomic impacts (for example, lost work capacity and labor productivity). They can also cause loss of health service delivery capacity, when power shortages accompany heat waves and disrupt health facilities, transport, and water infrastructure.

Cities are not being designed to minimize the accumulation and generation of urban heat, with a loss of greenspace and inappropriate housing materials (for example, metal roofs) that amplify human exposure to excess heat.

More can be found at [WHO.int](https://www.who.int).

arriving at a series of recommendations that the Housing Division is encouraged to consider in its pursuit of broader adoption of sustainability and resilience measures by Nashville's real estate development, owner, and investor community.

Four Key Areas of Focus

The guiding principles set forth in the *2021 Affordable Housing Task Force Report* continue to guide Metro's housing work today and include racial equity, innovation, connectivity and accessibility, and resilience. Building on this firm foundation, the panel recognized the importance of economic and social vitality as well as systemic benefits and impact to supporting an affordable housing ecosystem across the community. Delivering on Nashville's commitment to a sustainable future, given the intensifying challenges arising from climate change and weather events, requires urgent and dramatic action across the built environment. To spur housing developers to actively embrace resilience and sustainability measures, the panel's recommendations centered around four key areas of focus:

- Positioning Metro operations across all departments that touch affordable housing and sustainability to achieve the efficiency and innovation needed to meet Nashville's rapid growth.
- Embracing policy changes that will support and encourage the inclusion of sustainability and resilience measures in new development as well as redevelopment.

TAP Questions

Overarching Question for the Panel

Given the real threat that climate change poses for Nashville, how can the city develop a citywide strategy grounded in the guiding principles of the Affordable Housing Task Force and the city's sustainability objectives to increase the sustainability and resiliency of its existing and future affordable housing stock?

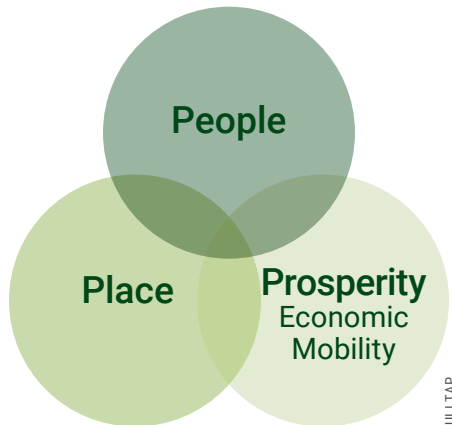
Supporting Questions:

1. What practices can Nashville replicate from other cities that have incorporated sustainability and resiliency features within the development of affordable housing?
 - What other approaches are available for the city to incentivize resiliency in the built environment?
 - What metrics/goals could we use to gauge the resiliency of our affordable housing stock routinely and proactively?
 - What are the best practices for administering sustainable, affordable housing programs?
2. What policies prevent the city of Nashville from developing sustainable, affordable housing? What features are necessary to provide basic levels of sustainability and resiliency (baseline), and what features are considered nice to have?
 - What are methods of incentivizing applying these newer, stricter standards or features?
3. How can the current mapping/data tools and local policies be leveraged to help increase the sustainability and resilience of current and future affordable housing development?
 - What land use controls can the city utilize to site affordable housing in areas of opportunity?
 - What housing typology examples can be piloted/incentivized by the city as proof of concept?
4. What are the funding sources/models available to help bridge the gap needed to incorporate sustainability and resiliency in the development of affordable housing? How can long-term resiliency be communicated to address the tension between affordability and resilience?
5. How can the Housing Division coordinate with other Metro departments to foster internal coordination and consistent application of the city's sustainability affordable housing efforts?
 - How can we ensure that any Metro initiative incorporating affordable housing includes sustainability principles?

- Updating the standards for building performance to more closely measure, track, and evaluate the energy consumption of the region’s buildings.
- Activating funding resources and incentives for developers and owners who are interested in embracing resilience and energy-efficient building measures.

Why Now?

In this era of truly global climate crises, cities need a common response that tackles housing availability, affordability, climate change, and inequality together, so that everyone, everywhere can thrive for generations to come. Sustainable and healthy buildings use energy efficiently, use materials that are low impact, prioritize preservation of existing building stock, and are powered by renewable energy sources. They are



The delivery of sustainable and resilient affordable housing will support the people of Nashville, their neighborhoods, and the economic mobility of all.

comfortable homes where energy bills are low, productive workplaces insulated from extreme temperatures, and healthy schools that contribute to focused learning.

Communities have an opportunity today to meaningfully change the course of their residents’ daily lives and provide benefits for residents to enjoy long into the future. From lower energy costs, particularly for the most vulnerable community members, to reduced greenhouse gas emissions and cleaner air across all neighborhoods, the positive impacts of sustainable and resilient actions are undeniable.

It Is Time to Take Action

Metro Nashville has tackled a remarkable amount of planning initiatives over the span of the past 10 years. From [NashvilleNext](#) to the [Metro Nashville Climate Adaptation and Resilience Plan](#) to the in-process [Unified Housing Strategy](#), the work that has been completed is impressive and signals the public sector’s commitment to a considered and thoughtful approach. Additionally, the efforts underway, led by a Housing Division that is just two years into existence, speak to the commitment of the Mayor, the Council, and the Planning Department, and to the exceptional professionalism and focus found in the Housing Division staff.

It is time to take the next steps to deepen this work and include a focus on sustainability and resilience that translates into and spurs private sector action and investment.

Stakeholder Interviews

Insights from the stakeholder interviews centered around the following themes:

- “Affordability” and “sustainability” have varied meanings to stakeholders.
- Nashville has great plans in hand—it is time to get to work.
- Policy is disconnected from zoning.
- Departments are not aligned around the city’s paths of growth.
- Affordable housing is foundational to affordable living.
- Preserving community and culture is important.
- Sustainability is not front and center.
- “The tyranny of the urgent” is guiding decision-making in many cases.
- Processes and permitting need streamlining.
- There is a need to minimize silos in Metro.
- Lot-by-lot zoning and provision of infrastructure is unsustainable.
- Residents are experiencing chronic long-term stressors.
- Innovation should be incentivized.
- Natural features need protection.
- Greenways are mobility resources (not just recreation).
- There is great potential for partnerships to leverage land.
- A clearinghouse for funding for affordability and sustainability is needed.
- Investment is perceived to only benefit new residents, pricing out long-time residents.
- There seems to be little awareness of long-term climate risks.
- Nashville is working hard to keep up with its growth.

The following “rules of the road” can help guide Metro Housing as it leans into this role of catalyzing change and spurring the type of resilient and sustainable affordable housing development it would like to see—and that Nashville will need—in the coming years.

Unite around a shared purpose to incorporate sustainability and resilience into affordable housing. Having a clearly defined purpose and vision provides the connectivity needed across Metro Housing and the broader Planning Department to inspire people to work together toward something bigger than themselves and what is on their desks today. It helps align people to tasks, to one another, and to the shared vision for a more sustainable and resilient housing environment.

Define a focused strategy. It is important to define a focused strategy, which includes a small number of prioritized and clearly identified goals (and can also include guidance on what not to do). With that focused strategy in hand, short-term tactics can garner attention and create excitement while work continues on longer-term, systemic changes. At the time of this report’s release, the Metro Housing Division is in the midst of creating the Unified Housing Strategy.

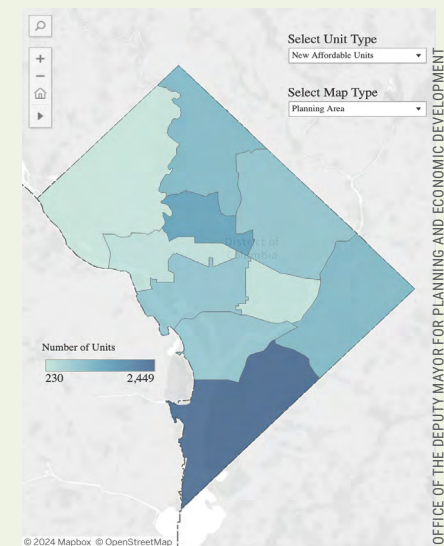
Lead with a new way of thinking. In much the same way Metro leadership has led the conversation around affordability, it will likewise need to model a new way of thinking

that embraces resilience and sustainable solutions. While civic leaders learn to embrace these solutions, conversations must also take place at the neighborhood level with neighborhood partners and organizations that can help the community see, understand, and begin to embrace measures that will improve their personal environments.

Map for visibility and alignment. Mapping data can assist in critical decision-making at the city level. Data visualization is a powerful tool that can transform complex data into easy-to-understand graphical elements. Metro’s [State of Affordable Housing dashboard](#) is a great start. The depiction of existing and proposed affordable housing is critical. It is also important to track and map the region’s transportation and infrastructure investments as well as community vulnerabilities, such as flood, heat risk, food deserts, market pressures, and potential displacement. With this information tracked and mapped, it becomes easier to understand the tradeoffs at hand and communicate those tradeoffs to partners across Metro, elected officials, and community members. The linkages between existing and planned housing stock, transportation, and vulnerabilities become more apparent and may help facilitate discussions around prioritization of capital and alignment of efforts. These maps can also become a community roadmap that is easily understandable and digestible.

Case Study Mapping for Visibility Washington, D.C.

Muriel Bowser, mayor of Washington, D.C., set a goal of producing 36,000 new housing units, of which 12,000 are to be affordable, by 2025. Each planning district within the city has been assigned a target number of units and [an online dashboard](#) provides access and transparency around progress made and the gaps that remain.



“It is important that each Ward increases their share of affordable housing and provides a variety of housing options for people to choose where they live.”

—WARD 4 RESIDENT



Recommendations for Metro Nashville Operations

The challenge before Metro Nashville—prioritizing and catalyzing sustainable and resilient affordable places to live—is critical. The lives of its current and future residents depend on this work. The solutions lie in the nexus of sustainability, resilience, and affordability, which the panel outlined below to help level-set their work.

Affordable housing is typically income-restricted, designed to meet the needs of those most financially burdened. Affordability is typically tied to a long-term duration through which the housing is to remain affordable.

Resilient housing is safe and strong housing that is designed to allow occupants to weather stressors and shocks (typically environmental or weather-related) and not only survive the event but to carry on and also thrive.

Sustainable housing is housing that provides its occupants with an energy-efficient and healthy environment. Sustainable homes are built with high-quality, high-performing materials and systems that withstand the test of time and continue to support the health and well-being of the residents within.

It is critical to keep the residents front and center—it is their safety, health, and well-being this work should support.

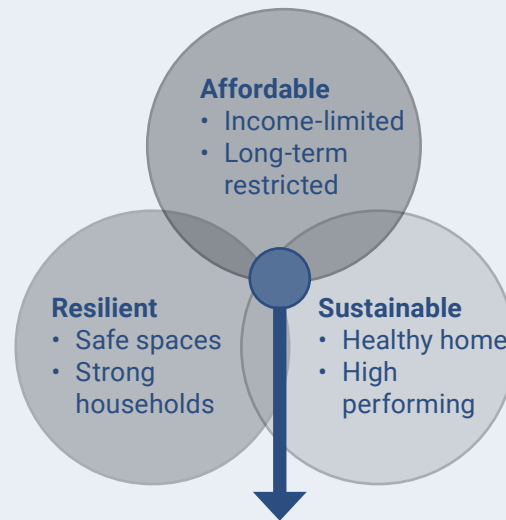
The Nexus of Sustainability, Resilience, and Affordability

While a focus on any of the three priorities—sustainability, resilience, or affordability—can provide the community with important benefits, deeper value is found at the

intersection of the three qualities, providing optimum solutions for people and the environment. The panel outlined five key features of developments that embrace the intersectionality of resilience, affordability, and sustainability.

1. **Density.** Building and site optimization can help extend the positive benefits of a sustainable, affordable, and resilient building to more people. Density also makes more efficient use of municipal resources and infrastructure, promotes responsible land use over urban or suburban sprawl, and aids in the preservation of Nashville’s natural features.

Sustainability + Resilience + Affordability



1. **Density, site optimization**
2. **Long-lasting materials, high-performing buildings**
3. **Infrastructure redundancy**
4. **Mixed typology, right-sized units**
5. **Multimodal mobility**

ULI TAP

2. **High-performance, energy-efficient building systems.** High-performance, energy-efficient building assemblies, such as well-insulated wall and roof systems integrated with advanced HVAC systems and smart building technologies that anticipate and respond to user needs, result in energy savings, lower utility bills, enhanced occupant comfort, and even increase resilience and sustainability. These systems are becoming the real estate industry standard, tenants are asking for energy-efficient features that help reduce utility bills, and investors recognize the opportunities for their return on their investment and are investing in projects built sustainably and resiliently.

3. **Infrastructure redundancy.** System redundancy, particularly infrastructure systems, is critical. Storms can and will knock out power supplies, and a back-up system can mean the difference between life and death. This resilience factor also leads to more sustainable living environments with less disruption and can support long-term affordability.

4. **Mixed-typology and right-sized units.** A thoughtful and adaptable approach to housing development acknowledges the diversity of housing needs among individuals and families, which can change over time due to life circumstances such as changes in family size or shifts in economic status. This can include moving from a smaller unit to a larger one when starting a family or downsizing as children move out. Such

flexibility is essential for accommodating life changes without necessitating a move out of the community.

- 5. Multimodal mobility.** Metro Nashville is making significant process in enhancing mobility options throughout the region, and is leading by placing a transportation referendum (Choose How You Move) on the ballot in November. Just as there is no single housing solution that suits everyone at every stage of life, no single mode of transportation can meet the needs of the entire population. Offering multiple mobility options ensures that community members have access to the transportation they need when they need it. Planning for safe pedestrian access, scooters, strollers, bicycles, wheelchairs, automobiles, public transit, car-sharing, and more is essential for supporting sustainable mobility solutions across the community.

One Mission. One Team. One Process.

Metro Nashville operations will need to scale to facilitate the delivery of sustainable and resilient affordable housing. The panel outlined a “one mission, one team, and one process” approach that should help the public sector meet Nashville’s housing needs and Metro’s stated housing goals.

One Mission

As recommended in the *2021 Affordable Housing Task Force Report*, Nashville should deliver at least 5,000 units of sustainable, resilient, workforce, and affordable housing

per year over the next 10 years. This is the north star, the aligned mission. The “one mission” approach establishes bold targets for housing unit production and preservation and galvanizes Metro Nashville around a unified mission supported through meaningful accountability. The upcoming UHS will also build upon and establish updated goals and include strategies to get there. Key performance indicators (KPIs) can help track and measure progress and should be published for public consumption. This allows Metro to publicly identify the problem, point to measurable solutions, and hold itself accountable to progress.

Set KPIs for new affordable units per year. To reach the targets established by the Affordable Housing Task Force, Metro Nashville needs to maintain a pipeline of 5,000 new affordable housing units per year, which makes this an important figure to track. These KPIs should also include resilience and sustainability targets as described later in this report.

Set KPIs for permits issued. Metro’s permitting process has a meaningful impact on the timing and delivery of predevelopment efforts. Using a permitting KPI to track permits issued by an accelerated time frame can help Metro better understand where improvement may be needed.

One Team

The “one-team” commitment aims to create an environment where every member of Metro Government’s staff, regardless of department, is dedicated to advancing

the housing mission. This commitment should include full-spectrum collaboration, a concierge-level navigator service for affordable housing developers proposing sustainable and resilient projects, and a “no wrong door” policy.

Establish a navigator role. Real estate development in its most basic form is a complex endeavor. Developers who produce resilient and sustainable affordable housing are going to face additional layers of complexity in approvals and finance. By establishing a role at Metro to help developers navigate these approvals, the region can deliver more resilient and energy-efficient housing to those who need it most. This “white glove” concierge service could also provide early connections to technical assistance with regard to sustainability and resilience resources. It will be important to connect developers to these resources early, even in the preapplication stage, to help ensure they have access to the tools and resources needed to finance and deliver a quality product.

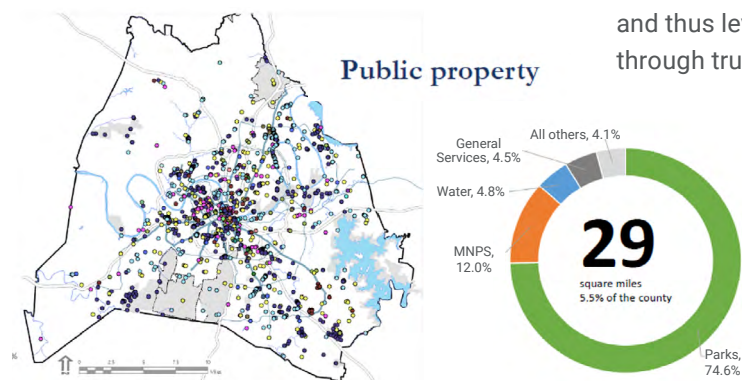
Pursue 360 collaboration. Collaboration and coordination across departments and with external partners are essential. As it relates to accelerating sustainability and resilience efforts, closer coordination between the following departments will be needed: Planning, Codes and Building Safety, Metro Water Services, the Nashville Department of Transportation and Multimodal Infrastructure, and the Director of Sustainability and Resilience in the Mayor’s Office. Key external partners will

include the Metropolitan Development and Housing Agency (MDHA), Nashville Electric Service, and Piedmont Gas.

Ensure no “wrong door.” There should be no “wrong door” through which developers enter the approval process for affordable housing. As the Housing Division and Metro Planning launch an “affordable housing permit” to expedite review of affordable housing projects, all departments will need to understand and embrace this philosophy and commit to supporting this unified pursuit of sustainable and resilient affordable housing.

One Process

Simplifying and streamlining operations will translate to real financial benefits for developers, which in turn makes affordable housing projects more feasible in Nashville. Metro is on the right track in identifying how permitting review can be improved by flagging affordable housing projects. With system improvements underway, Metro should also ensure that adequate resources are in place to support and continue to improve efficiency in permitting review.



Leverage the Community, Asset, and Land Use tool. As the Community, Asset, and Land Use (CAL) tool comes online, every effort should be made to integrate other tools and related permitting processes (MDHA and utilities) into CAL to create a more robust and informative tool. The integration into CAL should also include affordable housing certification, appropriate fee and review waivers, and expediting measures. Additionally, information regarding publicly owned land and the Housing Division’s dashboard and tracking tool, the latter of which is updated manually on a quarterly basis, would work more effectively if folded into the CAL program. The integration of these tools into one portal can provide a more streamlined and efficient resource, helping to move housing projects through the pipeline and provide transparency along the way.

Ensure adequate staffing. The tools and resources required to effectively support a growing city like Nashville will likely necessitate additional staffing and resources to meet the city’s development demands. Metro divisions that are currently understaffed or otherwise stressed should be prioritized and any opportunity to partner and thus leverage additional capacity through trusted partners should be explored.

Mayor O’Connell has issued Executive Orders exploring processes for review and future use of Metro-owned land. The graphic shows the types and extent of Metro-owned land in Nashville/ Davidson County.

Case Studies Improved Municipal Operations for Building Permits



Executive Directive 1 (ED 1)

Los Angeles, California. The City of Los Angeles issued Affordable Housing Executive Directive 1 (ED 1), which dictated that the city must review and approve each affordable housing permit within 60 days of the permit submission. The goal is that 100 percent of all permits are reviewed within this 60-day window. Additionally, the city has directed that building permits must be issued within five days of submission.

Tallahassee, Florida. The City of Tallahassee committed to issuing building permits for single-family and duplex units within seven days of submission, with a promise to refund application fees if that deadline is not met. The city is currently overachieving in this area, averaging 2.5 days to review and approve building permits.



Policy Recommendations

The development of affordable housing that is sustainable and resilient requires careful and intentional building siting. Selecting locations away from floodplains, steep slopes, and areas with a risk of wildfires is essential. This approach enhances the resilience of the structures and ensures the safety of residents, keeping them out of harm's way. The location of housing also directly impacts the financial sustainability of a household, supporting not just affordable housing arrangements but also affordable *living*. Positioning housing near transit resources can reduce transportation costs and commuting strains. Locating homes near places of employment, services, amenities, parks, and greenways can also support affordable, sustainable, and resilient living and improve quality of life.

Metro's commitment to sustainable, resilient, and affordable housing will be meaningfully supported by incorporating the concepts and standards into the city's comprehensive plan, zoning, and building codes. It is also critical that Metro clearly state where development, and particularly affordable housing, should be located. Delivering the infrastructure needed to support development on sites that further Metro's sustainability and resilience goals will require strong partnerships, with Metro taking a stronger role than currently exists, where infrastructure is provided in a lot-by-lot manner, driven by development.

In other areas, Metro should lead by example, particularly when it comes to exploring creative solutions in the use of Metro-owned land. Using Metro-owned

land to develop proof-of-concept projects can help demonstrate to the development community, residents, and other stakeholders how resilient and sustainable building methods, materials, and site design can be folded into a project.

It is also important to note that there are certain factors that could negatively impact Metro's ability to influence and promote resilient and sustainable affordable housing. Metro's structure and authority make planning for resilience difficult. Metro is unable to levy impact fees, which other cities often leverage to fund needed infrastructure and support important community resilience measures. Additionally, the lack of alignment between Metro's adopted plans and existing zoning creates additional layers of approvals, requires individual parcel reviews and approvals, and adds unnecessary complexity to an already robust development review process. It is also important to review the zoning code with a focus on sustainability and resilience. This ensures that the code supports these efforts and provides a clear path for such developments in the future.

Comprehensive Plan

The nearly 10-year-old [NashvilleNext](#) comprehensive plan will need to be updated to reflect the city's vision for sustainability and resilience. The following were noted by the panel as areas of potential improved alignment.

- **Update the city's building practices, zoning, and existing land use policy** in order to align with NashvilleNext and

reflect advances in building practices and energy conservation that support sustainability and resilience.

- **NashvilleNext requires updating** to reflect current thinking on climate change and the actions needed for the city to achieve sustainability and resilience goals related to affordable housing.
- **Expand [Metro's definitions for sustainability and resilience](#)** to be inclusive of long-term economic and social stability. This was a common theme in the stakeholder interviews. While the focus may initially be on the resilience of the structures across the landscape, it is ultimately the resilience of the people of Nashville that this work is driving to support.

Zoning

The city's commitment to sustainability and resilience should be reflected in the zoning codes. The use of transparent and by-right zoning can expedite the creation of affordable housing and speed projects that support the community's resilience.

- **Update the existing zoning designations.** By incorporating ideas from the [Building Performance Recommendations](#) section in the following pages, Metro's range of zoning designations can more directly facilitate the types of housing it would like to see built.
- **Update options for by-right development.** The process for seeking a Specific Plan (SP) zone change

regularly delays affordable housing projects. By updating existing base zoning and/or using zoning overlays to include requirements that meet Metro’s resilience, sustainability, and affordability targets, Metro can expand the by-right options to support a more streamlined process and support its housing goals.

- **Expand corridor zoning refinements.** Metro has already undertaken zoning modifications that provide opportunities for additional density along commercial corridors. Expanding these zoning updates is encouraged.
 - Updates should incorporate rezoning measures that support sustainability and resilience goals while also establishing entitlements. Attention to these matters now will help reduce future time-consuming rezonings, particularly for projects that are delivering affordable housing.
 - The panel also recommends expanding these efforts beyond the buildings that directly line a corridor. By expanding these modifications to include a buffer zone around the corridor, more residents will have access to the services and transportation options the corridors often provide.

As noted earlier, this is an important conversation and significant undertaking for Nashville. The benefits to the city and its economic vitality, however, will be sizeable and warrant the work.

Infrastructure

Infrastructure improvements today are largely managed on a time-consuming and labor-intensive site-by-site basis, happening typically as development occurs. A more proactive approach that uses system- or neighborhood-level infrastructure planning and implementation can incorporate future community resilience and better plan for growth. This forward-looking approach can also facilitate more expeditious and financially efficient infrastructure delivery in the future.

- **Hire a third party to research and recommend actions.** The staffing constraints within Metro are such that leveraging a third party likely makes sense. The focus should be on implementation actions for Metro to address system-level infrastructure improvements, budgeting, organizational structure to support the work, funding, division of labor (between public and private sectors), and implementation and construction.
- **Leverage Nashville’s [Strategies for Resilience](#)** with a focus on measures that will help reduce the heat island effect (e.g., increasing tree canopy requirements) and urban flood management (e.g., enhanced stormwater infrastructure) and build those measures into early implementation plans.

- **Pilot neighborhood-scale infrastructure.** A demonstration site, such as at an MDHA Envision site or in underserved areas near key institutions, can help developers and the community better see and understand the benefits of a neighborhood-scale approach to infrastructure improvements.

In Tallahassee, Florida, the city’s funding for [sustainable infrastructure projects](#) addresses a quadruple bottom line, creating a sustainable investment, creating an economic multiplier effect, mitigating a community hazard, and creating a new amenity for the community.

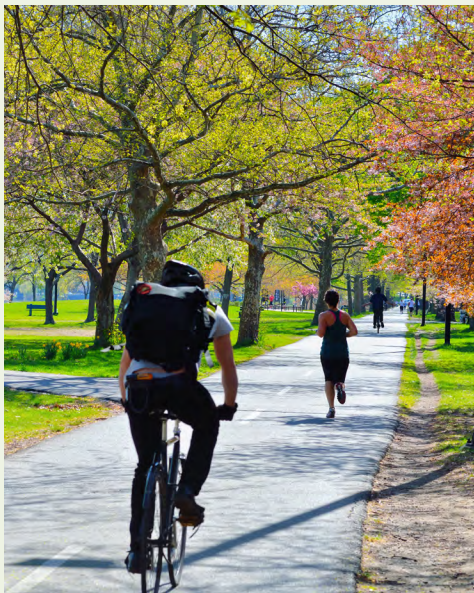
The infrastructure efforts underway in Nashville’s East Bank are also of note. As a new development, East Bank is able to roll out neighborhood-scale improvements early, building out systems that will support the residents tomorrow and well into the future. This approach in existing neighborhoods may be more complex, but it is worth pursuing and will provide enhanced resilience and cost savings in the long term.

Mobility

Community mobility infrastructure is also key to supporting and promoting affordable living in Nashville. Metro’s transit referendum provides an opportunity to impact affordability and sustainability by offering mobility options to individuals while also supporting the city’s goals for reduced carbon dioxide emissions. The areas around

Case Study Rails to Trails Dallas, Texas

The Katy Trail in Dallas has become a key multimodal corridor and cherished public amenity for the city. Built on an old K-T railroad line, the 3.5 miles of protected greenway connects users between the Uptown and Oaklawn neighborhoods north of the city's downtown. The American Airlines Center can be found at one end of the trail, the Central Expressway is at the other end, and a variety of destinations can be found in between. The trail also serves as a 26-acre linear park, providing welcome green and open space through one of the densest areas of the city.



transit hubs should become important locations for future housing development. Locating near transit facilitates easier, more affordable commutes and supports affordable living across the population.

Nashville's greenways are also important mobility infrastructure. There are great opportunities to reimagine and leverage these pathways as multimodal resources. More than just paths for recreation, the greenways can provide alternative commuting options, areas for programming and activation, and support community character. Metro is encouraged to create new models for design, implementation, and activation of greenways in urban settings to encourage their use as multimodal transportation corridors.

Metro-Owned Land

Mayor O'Connell's Executive Orders on the [Metropolitan Property Special Projects Steering Committee](#) recognize the potential for multiple uses of publicly owned land to address community needs and the steering committee is creating processes to leverage those parcels.

Metro is encouraged to innovate and lead by example using its land. Working in partnership with the private sector on Metro-owned land, Metro and its partners can demonstrate innovative and achievable site design, construction techniques, building materials, and improved development processes that are sustainable and resilient and can be used to create affordable and market-rate units.

Case Study Leveraging City-owned Land Boston, Massachusetts

The City of Boston recently completed an inventory of city-owned land with the goal of identifying potential sites for the development of additional affordable housing. With a goal of creating or colocating affordable housing on the city-owned parcels, the city issued a Request for Interest to the development community, soliciting potential ideas from the private sector. The responses signaled significant interest in the parcels and demonstrated creativity in the land use ideas.





Building Performance Recommendations

Resilient and sustainable homes and buildings perform at a high level, and Metro Housing has a role to play in promoting and communicating the value associated with these measures. Resilient buildings and homes are energy efficient, able to withstand the stressors and pressures of a warming climate, and promote the safety, health, and well-being of occupants within. These same buildings can also meet affordability goals, which, when combined with resilience, will create healthy, affordable living environments for anyone, regardless of income.

High-performance building standards are becoming common practice across the real estate development landscape. Building owners, investors, and property owners are recognizing the value of investing in design and construction best practices today that will generate significant cost savings for residents and reduce cost burdens well into the future.

Energy efficiency measures also reduce further climate impacts. From low-carbon emitting building materials to air handling systems that require less energy, there are ever-evolving and improving materials and processes that will reduce energy consumption, and with it, the often-harmful byproducts of traditional energy production will lessen over time and curtail additional future negative impacts to the environment.

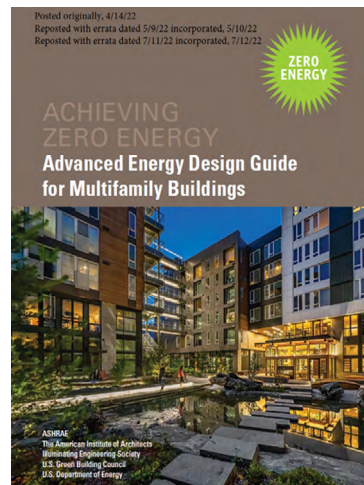
Buildings and homes that are built to be resilient create environments that support the resilience of building occupants. Residents who live in safe, healthy, and more financially attainable homes will be better positioned during extreme weather events to not only

survive but also to continue to thrive in homes that remain affordable.

New Construction

The advances in building materials and technology are staggering, with new products coming online every day. Using these materials, processes, and technologies effectively hinges on an integrated and thoughtful design strategy. From the building envelope to the controls on the thermostat, there are a variety of places where sustainability and resilience should be factored into new construction. The following are several foundational elements where new technologies can have a measurable impact on energy use:

- Building envelope modifications include energy-efficient insulation, air tightness measures, and incorporating passive cooling through windows, attic fans, etc.



[This guide](#), published by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), provides a host of valuable tools and resources for multifamily buildings.

- Equipment such as heat pumps, heat pump water heaters, and energy-efficient appliances should be used.
- Ventilation improvements assist with low-energy cooling through the use of operable windows, screens, doors, and fans.
- Smart controls should be installed to regulate indoor air temperature for maximum efficiency and programmed around anticipated home use or occupancy.
- On-site renewable energy sources, including solar photovoltaic (PV) technologies and ground-source heat pumps, can meaningfully impact energy costs and lead to reduced carbon emissions.

Each of the measures noted can reduce the long-term utility burdens associated with the home. And many products, particularly when paired with existing rebates, can also be cost-effective selections at the outset. Buildings and homes that are constructed without these measures today will at some point in the future require retrofitting, which will be a costly and disruptive scenario later.

Retrofitting Existing Buildings

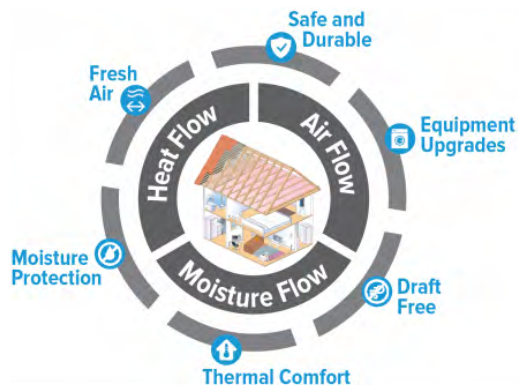
The redevelopment of an existing building is often a highly sustainable choice. By reusing the structure and materials within, and not sending a demolished building's materials to the landfill, some level of sustainability is achieved—but more will be required.

An early assessment or modeling of the building's existing energy usage and systems

is encouraged to understand the baseline conditions and identify areas for investment and improvement. This assessment should come with an associated cost analysis to provide a complete picture of the potential costs and benefits of the resilience and sustainability improvements.

Much like new construction, the following improvements to existing buildings will create the greatest energy efficiencies.

- Building envelope modifications, including insulation, high-performance doors and windows, and improved air tightness and sealing
- Upgrades to HVAC systems, such as heat pumps and ductless heat pumps that provide both heating and cooling, and energy efficient heat pump water heaters
- Energy- and water-efficient dishwashers, washers and dryers, and other appliances
- Ventilation improvements, such as heat- or energy-recovery ventilators, which are important components of highly efficient



The house-as-a-system approach considers how a home's components and equipment interact with each other to affect building performance.

building envelopes to recover energy loss and improve indoor air quality while preventing mold

- Smart controls
- Make-ready work, such as panel upgrades, wiring upgrades, and mold and asbestos mitigation
- On-site renewables, which can further reduce or eliminate energy costs, and roof-top solar where feasible.

Steps for Metro Housing

Metro Housing has an important role to play in promoting, supporting, and communicating information about these resilience and sustainability measures across its constituencies. The following steps will assist in the process.

Assess existing housing stock. At the start, a review of existing affordable and workforce multifamily housing and planned buildings, collected through modeling and Metro data analysis, will provide an important understanding of the current state of housing. This assessment should include information about each building size, typology, building envelope energy performance, and age as well as the ownership structure and notable features (or issues). This information will

assist Metro as it considers how to stratify and prioritize resource allocation.

Gather and share data. Metro should also gather cost-effectiveness data and associated analysis and communicate that information to investors, developers, and contractors to support the business case for these investments and improvements.

Require high-performance building standards. To the extent that state and federal law allows, developments seeking Metro funding should be required to meet high-performance building standards.

- For new construction, the panel recommends updating the building codes to meet the [Phius Passive House](#) standards or the [2021 IECC](#), potentially including the electrification-ready appendix, which enhances building energy performance provisions by adding solar-ready and electric vehicle (EV) ready requirements, preparing buildings for future energy technologies and sustainable practices.
- For building retrofits, a comprehensive building performance assessment will help identify feasible measures for reductions in energy consumption, such as weatherization, insulation, and electrification, and should be required.

TN Adoption IECC 2018	Model Code IECC 2018	Model Code IECC 2021
Wood Wall = R-13 Ceiling = R-30 Glazing U factor = 50	Wood Wall = R-20 Ceiling = R-38 Glazing U factor = 25	Wood Wall = R-20 Ceiling = R-49 Glazing U factor = 25

The improvements associated with the code updates come with estimated cost savings as noted here by the Department of Energy (for Tennessee) and associated costs as amortized into a mortgage: \$719 annual energy cost savings; \$43 annual increase in mortgage.

Multifamily New Construction | Impacts

Impacts to Institutional Owners

While there is already a growing trend toward all-electric multifamily buildings, institutional owners may see an increase in their operating costs (although costs may still be lower than the energy costs of existing multifamily buildings). It would be helpful to pursue policies that decrease operating costs in all-electric buildings, particularly for low-income households.

Installed Cost	Energy Costs*	Non-Energy Benefits
<ul style="list-style-type: none"> Potential installed cost decrease, depending on the technologies used. <ul style="list-style-type: none"> Up to \$2/SF decrease for lowest cost scenarios (although some scenarios saw a cost increase of up to \$2/SF). This decrease is equivalent to a 1% reduction in total construction costs. 	<ul style="list-style-type: none"> Potential energy cost increase compared to other new buildings <ul style="list-style-type: none"> Could increase by \$0.11-\$0.22/SF (15-30%) annually compared to a new mixed fuel building.* However, institutional owners will still save on energy costs compared to typical existing building. 	<ul style="list-style-type: none"> Reduced construction time by eliminating gas pipe and infrastructure installation needs. Improved ease of system maintenance due to a single heating and cooling system. Better air quality and safety due to lower risks of fire and eliminating carbon monoxide and NOx emissions. Less potential for future disruption due to future retrofits that may be required.

Options for Reducing Energy Costs:

- Lower electricity rates.** Could be across the board, for high efficiency electric heating, and/or for low-income customers. New rate design could also include time-of-use rates that reward heat pumps.
- Incorporate solar.** On-site solar PV and/or community solar can help reduce electric rates for customers.

Options for Reducing Installed Costs:

- Enact an energy or carbon performance policy for existing buildings.** This will further increase the motivation for owners to buy or demand new all-electric buildings.
- Invest in education and training for architects, engineers, and building trades.** This can help reduce soft costs associated with new all-electric design strategies.
- Develop opportunities for peer learning, recognition, and/or data sharing.** This will further reduce soft costs for developers.



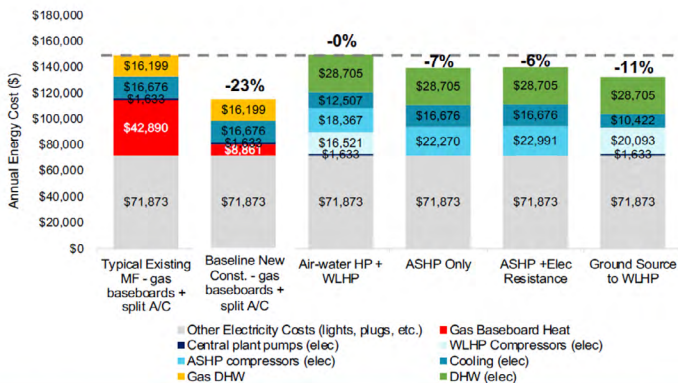
*Institutional owners are assumed to pay the entire energy cost of the building, including the in-apartment heating and cooling costs (costs that were assumed to be tenant-paid on previous slides). Cost ranges depend in part on metering configuration of the building.

- For owner-occupied, single-family homes, the [TVA EnergyRight](#) program can provide helpful guidance, referrals, and incentives for pursuing energy efficiency.
- For multifamily rental buildings, the [TDEC Home Efficiency Rebate Program](#) can provide helpful incentives for energy-efficient improvements. The federal Inflation Reduction Act is further supporting and “supercharging” this work across the states and it is worth researching further.
- Ideally, buildings that have undergone complete retrofits could be identified in a public database. This initiative would serve as an example and encourage others to pursue similar upgrades, demonstrating the benefits and feasibility of retrofitting for improved energy efficiency and sustainability.

Multifamily New Construction | Energy Costs

Energy Costs Compared to Typical Mixed Fuel Buildings*

Master-metered existing building and baseline building (no fixed gas charges for tenants)



Takeaways:

- Energy costs for new all-electric multifamily buildings are breakeven or lower than in a typical existing multifamily building that is master-metered. Tenants moving from a typical existing building into a new all-electric building may see their energy costs go down.
- Compared to mixed fuel construction that is master-metered, energy costs for new all-electric multifamily buildings are higher. The energy cost increase ranges from 15% to 30%.
- In the all-electric scenarios, the metering configuration will determine the final distribution of the energy costs between the tenants and the owner.



*Based on data provided by BED, the average heating energy use in existing multifamily buildings is 516 CCF / apt / year, while the high performance all-electric new building is just 107 CCF / apt / year. The costs assume that all scenarios are master metered for gas and electricity, and all use electric stoves.

This information, from the [Building Electrification Institute](#), can assist cities and their constituents with understanding the cost-benefit analyses associated with clean energy improvements to multifamily buildings.

Convene and educate. Metro Housing can continue to play an important role as a convener of stakeholders (developers, owners, investors, partners, community organizations, and more) and educator to support sustainable practices across all development scenarios.

Build partnerships across disciplines. The range of subject matter experts, organizations already working in this area, and resources across all levels points to the importance of partnerships as no organization can be expected to manage it all. Metro will need to continue to build partnerships across the related disciplines in order to increase implementation success.

- **Support workforce development.** The skills and knowledge this field requires calls for a highly trained workforce. Support workforce development through training and certifications for contractors, installers, and other building professionals. The Office of Economic Development in the Mayor’s Office could lead this work.
 - **Coordinate funding.** Evaluate partnerships that may provide additional offsets through coordination with other funders and incentive providers such as Nashville Electric Service, the State of Tennessee, and the federal government.
 - **Partner across departments.** Again, Metro is encouraged to break down silos between departments in order to actively include other Metro Nashville staff for relevant expertise.
 - **Leverage additional resources.** This work is underway across the country and there are a host of toolkits, resources, and guidebooks to source. ULI’s [Developing Urban Resilience website](#) and [ULI Developing Resilience Toolkit](#) are great places to start.
- Lead by example.** This common theme across recommendations positions Metro

as a leader in the community, using its resources to support and promote resilient and sustainable practices.

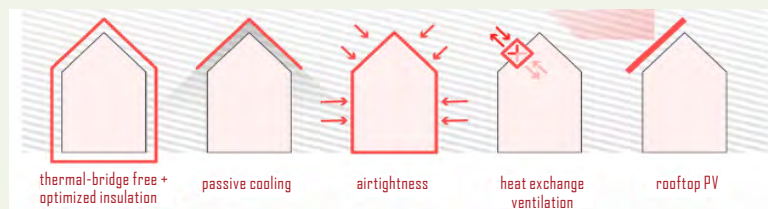
- **Leverage the Barnes Housing Trust Fund.** Use Barnes Housing Trust Fund funding and Metro-owned land donated by the Barnes Fund to help developers pilot the development of housing that incorporates sustainability features.
- **Provide preapproved plans.** Metro Planning is also encouraged to consider offering ready-made plans for zero-energy-ready single- and two-family homes using a variety of common lot sizes and shapes. As preapproved plans, these projects will move through the review process quickly and speed new housing to market, allowing developers to generate returns faster while also closing the housing gap with sustainable and resilient units.
- **Provide prescriptive typology paths.** Similarly, by providing prescriptive pathways for different residential typologies across Nashville, projects can move through review quicker and begin construction faster.
- **Partner for research and technical assistance.** In a city rich with higher educational institutions, partnering with these and other institutions, like the Oak Ridge National Laboratory, in pursuit of research and other technical assistance is feasible and could offer tremendous value.

Case Studies

Promotion of Zero-energy Buildings

Phoenix, Arizona. In 2016, the City of Phoenix adopted [2050 Sustainability Goals](#), its roadmap to becoming a carbon-neutral, zero-waste city. As a step toward achieving these goals, the city is encouraging the construction of ultra-low energy use homes. Working in partnership with the American Institute of Architects, Arizona, the city has made available—for free—[construction plans](#) to build a “near net-zero energy” single-family home.

Boston, Massachusetts. In 2017, the City of Boston set a goal of carbon neutrality in the city by 2050. The [2019 Carbon Free Boston Summary Report](#) outlined the reasoning, framework, and broad strategies for how the city must lead the way to reduce carbon emissions as soon as possible to do its part in avoiding the worst effects of climate change. In 2020, the City of Boston’s Department of Neighborhood Development (DND) published its [guidebook for Zero Emission Buildings \(ZEBs\)](#) in answer to the mayor’s call to make DND’s new construction portfolio of affordable housing carbon neutral.





Incentives and Financing Tools

The energy efficiencies that translate into lower or even \$0 energy bills have an outsized impact on low-income and other vulnerable communities. This fact makes the incorporation of sustainability and resilience features into affordable housing developments all the more critical to Nashville's future as a thriving community for all residents. There are a number of steps Metro can take to incentivize and help support the financing of this type of development.

Zoning Incentives

Metro's ability to provide density and other zoning incentives is important for a region that is experiencing the type of residential growth seen in Nashville. The following incentives are worth considering further.

- **Provide incentives for green building.** Incentives—such as density or height bonuses or reductions in parking requirements—could be granted for achieving sustainable or green building certification. The incentives used in downtown Nashville could serve as a model or a launch point for expanded incentives for affordable housing that reach beyond downtown's geography.
- **Provide plans.** Again, by providing plans for the types of structures Metro would like to see built, like the [Department of Energy Zero Energy Ready Homes](#), property owners and builders can speed their projects through the approval

processes, reduce development uncertainties, and save time and money.

- **Offer process assistance.** Metro can provide assistance moving through processes, using the navigator position referenced on page 11, or committing to approve land use and building permits or Certificates of Occupancy in very short timeframes.

Financing Tools

Funding housing construction remains extremely difficult at the time of this study. Construction and materials costs are high, as are interest rates, making development even more challenging. Layering in sustainable and resilient building features on top of those existing challenges can make the financing pursuit even more complex, but Metro has access to a number of tools that can help bridge the financing gap in housing unit production.

- **Expand the Barnes Fund.** The Barnes Fund could be expanded and a requirement added to awards for high-performing sustainability and resilience features in affordable housing developments.
- **Create new funding tools.** New funding tools could be created that close financing gaps while also preserving affordability. While these may not be Metro-led funding mechanisms, Metro could help partners explore the options around these types of tools.

Case Study Housing Design Demonstration Projects

Bainbridge Island, Washington

The Housing Design and Demonstration Project was a pilot program that has proven to be effective and has now been adopted into the City of Bainbridge Island code. The goals of the [Housing Design Demonstration Projects](#) program are to increase the variety of housing choices available to residents across underserved portions of the socioeconomic spectrum; promote compact, low-impact development; and encourage high-quality and innovative building design, site development, and "green" building practices. The program demonstrates that innovative design and building techniques (conserving water and energy, using sustainably sourced materials, limiting environmental impacts) are compatible with market considerations. In exchange for achieving one of the green certifications listed, 50 percent affordable housing, and home sizes smaller than 1,600 square feet, the projects receive either a 2.5 base density (residential) or a maximum bonus mixed-use floor area ratio (in mixed-use districts) as well as flexibility in certain zoning and site design requirements. [Project updates can be found here.](#)

HOUSING RESOURCES BAINBRIDGE



Case Study Austin Housing Conservancy Fund Austin, Texas

The [Austin Housing Conservancy Fund](#) is an open-ended social impact private equity fund. Unlike other impact investment funds, which invest in enterprises with social or environmental missions, the Austin Housing Conservancy Fund invests long-term equity directly in the problem it endeavors to solve: moderate and middle-income housing affordability. Its mission is to purchase and preserve multifamily properties to maintain affordable rental rates for Austin’s teachers, first responders, medical professionals, and others vital to Austin’s day-to-day livability and success. The fund delivers to investors high single-digit financial returns and social and environmental outcomes that directly benefit Austin’s working professionals.

“Failure to act now risks your child losing his favorite teacher, your fire station losing its crew chief, or your local ER losing its best triage nurse.”

- A revolving predevelopment fund could be established to support new and minority affordable housing developers.
 - A [Mixed-Income Neighborhood Trust \(MINT\)](#) could be established to preserve current rents in areas where gentrification threatens displacement.
 - Mission-oriented private equity sustainability and preservation funds and loan guarantees can be used to support housing development that aligns with the fund’s mission.
 - A smaller development improvement fund could provide funds for small developers in exchange for meeting sustainability and resilience goals.
 - Donor-advised funds, program-related investments, and mission-related investments use various philanthropic vehicles to fund projects either through equity or loans and could be used to support resilient and sustainable housing production.
- [Local Initiatives Support Corporation \(LISC\)](#), [Enterprise Community Partners](#), and [The Steinbridge Group](#) are existing fund providers with specific housing goals and are worth exploring further.

The UHS, currently in process, will also make financing recommendations. The recommendations in this TAP report could be considered during the UHS process and help inform the UHS recommendation formation.

Additional Financial Incentives

Tax abatement, downpayment assistance, and new homebuyer assistance financing tools can also assist with financing and could be shaped to incentivize sustainability and resilience. Additionally, housing development tied to economic development incentives creates a virtuous circle of economic development, workforce development, and places for people to live. Other states have successfully used tax abatement models and the State of Tennessee should explore the feasibility of the options listed below.

- **Real estate tax abatement** can be used for both short- and long-term tax relief to meet various goals. The State of Washington offers a [Multifamily Property Tax Exemption](#) in exchange for income- and rent-restricted units.
- **Sales tax abatement incentives** could be provided for the purchase and installation of sustainable or resilient improvements in housing developments and should be explored further.
- **Home buyer downpayment assistance** could be offered to home buyers layering in sustainability measures.
- **Subsidized interest rates** could be used to support first-time homebuyers in home purchases that incorporate sustainability features.

Fund Walkable Neighborhoods + Green Infrastructure

In addition to Metro’s focus on the production of sustainable and resilient affordable housing, supporting the sustainability and resilience of the broader neighborhood and facilitating green infrastructure is equally important.

Explore funding for green infrastructure.

Installation of water and stormwater infrastructure can be especially onerous to small developers. Finding avenues to additional financial support for these improvements, particularly those tied to creating walkable and sustainable environments, should be considered and explored further.

The recently enacted [Connecting Housing to Infrastructure Program \(CHIP\)](#) was created to enhance mobility infrastructure around affordable housing projects. Metro should explore the expansion of this tool to include or require green infrastructure improvements or determine whether a similar program could be created to achieve sustainability



and resilience at the neighborhood level in conjunction with affordable housing.

Technical Assistance

Technical assistance and additional federal financing are available, particularly through the Inflation Reduction Act, for sustainability projects that serve low-income residents.

Explore funding for technical assistance.

Building on Metro’s work with ThinkTennessee, it should consider leveraging resources, such as those offered by organizations like Enterprise Community Partners, to provide technical assistance and predevelopment funds for affordable housing development.

Explore the Solar for All assistance. In April of 2024, the U.S. Environmental Protection Agency’s [Solar for All program](#), which is a part of the agency’s broader [Greenhouse Gas Reduction Fund](#), approved \$156 million for projects in the state of Tennessee that enable low-income and disadvantaged communities to deploy and benefit from distributed residential solar. The program also provides technical assistance for workforce development, permitting, siting, and interconnection work.

Support applications for assistance. Metro can also facilitate and support grant applications by developers to cover costs for:

- Solar on rooftops of single- and multifamily residential affordable housing.
- Electric vehicle charging stations at multifamily residential affordable housing projects.

- Solar and battery storage for neighborhood resiliency centers.

Partner for Expanded Capacity

While Metro Government’s role as a leader in sustainable, resilient development is clear, partnerships remain key to working across the landscape of neighborhoods and communities. By partnering with local universities, schools, and churches, Metro can explore additional vehicles for delivering additional affordable housing, and housing that is sustainable and resilient, across the region. The cities of Atlanta, San Antonio, and Seattle have initiatives to encourage faith-based institutions to consider building affordable housing on their surplus properties. ThinkTennessee has led on this work in Nashville, researching what faith-based institutional land is available and working with partners to create tools for faith leaders to consider if and how to use their land for affordable housing.

[Zoning Practice: Using Faith-Based Land for Affordable Housing.](#)

This 2023 APA publication explores the relationship between land supply, the housing crisis, and the ability of zoning regulations to limit—or allow—additional development opportunities to address the need for affordable housing. The report also includes case studies of successful projects that have been completed on faith-based land.

Conclusion

Metro Housing is working hard every day to support and facilitate improved housing conditions for every Nashville resident. The department's intense focus on affordability and its expansion to also include sustainability and resilience will be required to help ensure that every resident is able to not only survive in their home but also thrive well into the future.

Building materials, assemblies, and products are continuously improving in the pursuit of better energy efficiency. Developers are taking note of these advancements, with many wanting to embrace the progress to create more sustainable and efficient buildings. Public policy and governmental

funding can spur work in this area further, making it just as cost-efficient to use sustainable approaches as historic practices.

The benefits of sustainable and resilient housing development to the homeowner are numerous. The immediate health benefits of a home that provides appropriate heating in the winter and cooling in the summer, that protects from storms, winds, and floods, are readily apparent. The added benefits of these improvements are the long-term economic benefits that support affordable living, helping ensure that more residents, particularly the vulnerable residents for whom these affordable projects are designed, are able to remain in place and continue to afford

to live in their homes over the course of their lifetime.

While constraints imposed at the state level may require creativity at the local level, federal programs and funding are available and other similarly situated cities across the United States are finding their unique paths forward and can serve as guides in the work. Metro has the will, the local support, and the professional staffing to pursue the type of affordable, sustainable, and resilient housing that more and more Nashville residents need. These efforts take time, strong leadership, and committed staff—and Metro is on the right path.



Suggested Timeline for Implementation

Start Today	3 to 6 Months	6 Months and Beyond
Establish KPIs to support a 360-collaboration process across departments for permitting developments that include sustainable, affordable housing units.	Leverage the Community, Asset, and Land Use (CAL) tool to gather data and communicate information.	Update NashvilleNext and Strategies for Resilience to include innovative sustainability and resilience practices.
Continue refining the one-process approvals policy to make the permitting and construction of affordable and sustainable housing more efficient.	Create a “white glove” concierge service by hiring a navigator position to help advance sustainable, resilient, and affordable projects through the approval process and continue to iterate to improve internal collaboration.	Expand and align mobility infrastructure to the path of future housing development.
Continue to communicate the nexus of sustainability, resilience, and housing affordability as essential building blocks for resilient communities.	Hire a third-party firm to identify systems-level process advancements and develop an effective strategy for resource-efficient infrastructure improvements.	Expand zoning around corridors to broaden density allowances and position more residents closer to transit and services.
Track progress detailing the number of units and permits issued on the accelerated permitting process.	Use zoning by right to expedite projects that support the community’s resilience, sustainability, and affordability targets.	Reimagine the city’s greenways as multimodal resources.
Support new models of thinking about sustainability and housing through convening and educating stakeholders on sustainable practices, coordinating funding and technical assistance where possible.	Review existing affordable and workforce multifamily building energy use to prioritize resource allocation in pursuit of improved housing stock.	Shift to neighborhood-level infrastructure planning and implementation, prioritizing measures that reduce the heat island effect and improve urban flood management.
Provide resources and education to households in owner-occupied single-family homes to help them pursue energy-efficient upgrades.	Require high-performance building standards for all affordable housing developments seeking Metro funding or other Metro-controlled incentives.	Use Metro-owned land to develop a pilot to demonstrate housing and infrastructure innovations at a neighborhood scale.
Explore funding for technical assistance provided by nonprofits and the federal government.	Establish density and/or height bonuses for projects meeting Metro’s affordability and sustainability goals and located in areas adjacent to transit corridors.	Adopt new construction standards to move to the 2021 International Energy Conservation Code (IECC) or PHIUS Passive House standards.
	Expand Barnes Fund requirements to include high-performance, sustainability, and resilience features.	Retrofit existing buildings to incorporate the newly adopted sustainability and construction standards.
		Create preapproved plans and prescriptive residential typologies that can be expedited to meet Metro’s sustainable and resilient housing goals.
		Equip a navigator position to offer process assistance and support and facilitate grant applications by developers seeking technical assistance and federal funding for sustainability features and technologies.
		Create a predevelopment revolving fund to support minority affordable housing developers.
		Create a Mixed-Income Neighborhood Trust to preserve affordability in gentrifying areas.
		Align tax abatement, down-payment assistance, and first-time buyers’ assistance with sustainability and resilience goals.
		Fund green infrastructure improvements at the neighborhood or community level to lessen development costs and create positive community benefits.

- Operations
- Policies
- Building and Performance Standards
- Financing and Incentives



Appendix

Additional Resources

The panel provided the following additional resources in support of the work contemplated by Metro Housing.

U.S. Department of Energy

[Building America Solution Center](#)

[Building Science Advisor](#)

[Multifamily Retrofit Tools and Workforce Resources](#)

ULI Publications

[Decarbonizing the Built Environment: 10 Principles for Climate Mitigation Policies](#)

[ULI Austin Net Zero Imperative](#)

[ULI Charlotte A Roadmap to Net Zero for New Commercial Buildings](#)

Housing related

[Making It Pencil: Can We Get Housing for Middle-Income Households to Work?](#)



Housing Division Definitions

Resilience: The ability of a community's-built environment, particularly housing infrastructure, to withstand and recover from natural disasters, economic downturns, or social disruptions while both maintaining the capacity for adaptation and mitigating the risk of displacement

Sustainability: Establishing and upholding conditions in which residents coexist with the natural environment by designing, constructing, and managing housing developments in ways that minimize environmental impact, further social equity, promote safe neighborhood mobility, and ensure long-term neighborhood viability



About the Panel



Molly McCabe
Panel Chair
CEO and Founder
HaydenTanner



Molly McCabe is the CEO of HaydenTanner, a development and investor advisory firm accelerating impact and sustainability in the built environment. A veteran of commercial real estate finance and capital markets, she serves as a bridge between risk and return, visionary development and the bottom line, to create financially and environmentally resilient buildings and vibrant, sustainable cities. Experienced in leading through complexity, she has also helped launch and guide several start-ups, new ventures, and change management initiatives.

McCabe sits on the boards of The Freshwater Trust and the City Craft Foundation and is co-founder and board member of The Lotus Campaign, providing housing-driven solutions for homelessness. She is past chair of ULI’s Responsible Property Investment

Council, founder of a venture capital–funded, commercial mortgage–backed securities firm, and manager of an institutional real estate capital markets group. She is author of *Practical Greening: The Bottom Line on Sustainable Property Development and Investment* and “Financing and Driving Value: Responsible and Resilient Property Investing in the New Millennium.”

McCabe is an industry leader on investment, climate change, social impact, and resilience; a mom, dog-lover, amateur “handy-woman,” and serial entrepreneur.

Eric Alexander
Tennessee Housing
Development Agency



Eric Alexander is the director of Multifamily Programs for the Tennessee Housing Development Agency (THDA). Alexander has over two decades of experience in affordable

housing finance. Prior to joining THDA, he served as the multifamily development director for SCHousing, overseeing the 9 and 4 percent LIHC and MTBA programs along with the state of South Carolina’s community development funding programs. Prior to that, he served as the assistant director of Real Estate Development for Housing Programs at RIHousing (Rhode Island’s housing development agency), overseeing gap financing funds for the agency in Providence, Rhode Island. He began his affordable housing career at the Massachusetts Department of Housing and Community Development, serving in a variety of program staff and leadership positions. In all of these roles, he has worked closely with nonprofit and for-profit developers, as well as various municipalities, to fund the construction, renovation, and acquisition of affordable housing, public facilities, and commercial improvements supporting affordable housing.

Additional prior experience includes work for the Manufactured Housing Institute of South Carolina and the national Manufactured Housing Institute.

Joe Backer
Mayor's Office of
Housing in Boston



Joe Backer is a senior development officer in the Neighborhood Housing Development division of the Mayor's Office of Housing in Boston. In this role, he works to support the creation and preservation of affordable housing in neighborhoods across the city by deploying public subsidies and leveraging city-owned land. The Mayor's Office of Housing has worked closely in recent years with other city and state agencies, technical experts, and community stakeholders to support the decarbonization of affordable housing in its many varied typologies. Backer has led the launch of several new programs aimed at spurring decarbonization and deep energy retrofits in Boston's existing affordable housing, from the iconic triple-decker to large multifamily residential buildings. He works with many different housing and community development organizations to advance affordable housing projects that help create safe, sustainable, and affordable homes for Bostonians.

Backer has a decade of experience working for the City of Boston in a range of roles and policy areas. Prior to joining the Mayor's Office of Housing, he received his masters in public policy from the Harvard Kennedy School of Government, during which time he worked as a Fellow with the city's Housing Innovation Lab.

Janey Camp
University of Memphis



Dr. Camp is a research professor and associate director of adaptation and resilience for the Center for Applied Earth Science and Engineering Research (CAESER) at the University of Memphis. Camp's research utilizes tools and models to address today's challenging issues related to infrastructure management and community resilience. Projects involving Camp's expertise primarily include investigating the impacts of climate change and natural hazards on transportation and water infrastructure systems and the communities they serve. She has led and contributed to projects sponsored by the Tennessee Department of Transportation (TDOT), the Federal Highway Administration, the U.S. Army Corps of Engineers, the U.S. Department of Homeland Security (DHS), the National Waterway Foundation, and others. Camp's work has resulted in numerous journal publications, multiple conference presentations, and service on local and national engineering boards and committees.

Camp is a licensed civil engineer, a certified GIS professional, and certified floodplain manager in the state of Tennessee and actively participates in the American Society of Civil Engineers (ASCE) where she was recently elected to the rank of Fellow. At the local level, Camp has worked closely with the City of

Nashville, Tennessee, as part of its Smart Cities Council efforts related to urban flooding and vulnerable populations, served as co-chair to the Resilience and Adaptation Subcommittee for Nashville Mayor Cooper's Sustainability Advisory Committee, and currently serves on the Metro Stormwater Management Commission. Camp serves on national-level committees for ASCE including the Committee for America's Infrastructure and the Infrastructure and Research Policy Committee, the Transportation Research Board's Inland Waterways Transportation Committee, served as a co-author for the Southeast Chapter of the Fifth National Climate Assessment, and has recently been appointed to the inaugural National Institute of Building Sciences (NIBS) Lifelines Advisory Panel (LAP).

Camp also has a passion for education outreach and stakeholder engagement. She has worked with Metro Nashville Public Schools, the Tennessee Department of Education, and private organizations to integrate GIS and risk-informed decision support into Science, Technology, Engineering, and Math (STEM) curriculum and other public education activities.

Jennifer Horne Urban Campus and Core



Jennifer Horne is a dynamic leader with over 15 years of sustainable development and operations experience focusing on performance-driven results. As an executive with international real estate firm Lendlease for 12 years, she led development and sustainability teams to achieve successful project outcomes in world-class developments, master-planned communities, and public/private partnerships.

She is the CEO and managing partner of Urban Campus and Core, a development and real estate advisory firm focused on helping clients explore new opportunities, expand existing capabilities, and optimize their real estate footprints. As a Nashville native and graduate of Vanderbilt University, Horne has deep roots in the community and has a vested interest in creating inclusive and sustainable growth through innovative community developments.

Over the course of her career, she has developed innovative partnerships to design award-winning sustainable developments, unique community-led real estate projects, and transformational mixed-income communities.

Melissa Lapsa Oak Ridge National Laboratory



Melissa Voss Lapsa currently serves as building technologies program manager at Oak Ridge National Laboratory (ORNL). ORNL is home to the Building Technologies Research and Integration Center (BTRIC), a Department of Energy–designated National User Facility for RD&D on cost-effective energy-efficient, low-carbon, resilient, and grid-edge building technologies. Lapsa has over 25 years experience conducting market research, policy analysis, and institutional and consumer behavior research aimed at deploying cost-effective energy-efficient technologies, including a two-year assignment from ORNL to the Netherlands Agency for Energy and the Environment (SenterNOVEM).

Abena Ojetayo City of Tallahassee



Abena Ojetayo is an assistant city manager for the City of Tallahassee. She was the first chief resilience officer for the City of Tallahassee, leading the development of the city's Community Resilience Plan. She has researched and worked in various countries, including working as an energy and infrastructure planner of a town in Greece following a devastating earthquake, and managing an urban design team for the flood prone Anam New City, Nigeria, a project that was recognized by the Clinton Global Initiative as a promising approach to international sustainable development.

Before entering local government, Ojetayo worked on climate action planning at Cornell University and supported the green building and infrastructure design effort for its NYC Tech Campus in the aftermath of Superstorm Sandy. She served as Florida A&M University's first chief sustainability officer and the founding executive director of their Sustainability Institute, tasked with building resilience across all academic and operational aspects of the university. Ojetayo has an interdisciplinary background, receiving a bachelor's degree in sustainable infrastructure and a master's in engineering management, both from Cornell University.

She is a Leadership in Energy & Environmental Design (LEED) accredited professional and was named among the "10 New Faces of Civil Engineering" by the American Society of Civil Engineers (ASCE), highlighting her as one of the industry's next leaders.

**David
Steinwedell**
Affordable Central
Texas



David H. Steinwedell is a 35-year veteran of the commercial real estate industry and has worked in a variety of disciplines including public and private investment management, acquisitions, debt, capital markets, investment banking, and asset management. Steinwedell is CEO and board chair of Affordable Central Texas, the sponsor and investment manager of the \$400 million Austin Housing Conservancy Fund in Austin, Texas. Over his career, Steinwedell has completed over \$15 billion in transactions across all property types and as part of private equity funds, REITs, and other investment vehicles. A graduate of Hamilton College, Steinwedell currently serves as past chair of the Austin Economic Development Corporation board and has served on the boards of National Association of Real Estate Investment Managers (NAREIM), ULI Austin and Atlanta, The Trust for Public Land, and the Tritt Foundation.

Marja Williams
AICP, LFA
Urban Oranje



Marja Williams has more than 25 years' experience in urban planning and real estate development, leading integrated teams to design and build healthy communities. She has led a variety of successful projects, ranging from the Bainbridge Island Art Museum and the Island Gateway commercial project to the 130-unit Grow Community, one of the first residential net zero energy neighborhoods in the United States, as well as The Walk, a zero energy multifamily project on Bainbridge Island. Williams's experience extends from policy development in state and federal government, to work as an urban planner in a local municipality, to leading the Programs team for the International Living Future Institute. She has also worked with global conservation teams, including Conservation International and Wildlife Conservation Society, to advise on biodiversity offsets and the investment of international endowment funds for conservation. Williams's work now focuses on managing development of sustainable, affordable, and healthy communities.

Williams is the incoming 2024 chair of the Urban Land Institute's Sustainable Development Council and a member of the ULI Pacific Northwest Affordable Housing Council. Williams contributed to the Advisory Services panel to draft the *Ten Principles for Building Healthy Places* report and continues to participate in ULI's Building Healthy Places program. Williams holds an executive MBA from Cornell University and a degree in environmental science and policy from Oregon State University.