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Version 5.28.21

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An Affordable Eco-Dwelling Roadmap:

A guide for land trusts and housing organizations to collaborate on inclusive, holistic, and sustainable affordable housing developments.

Developed through a partnership between The Kingston Land Trust and Bard College's MBA in Sustainability

<https://kingstonlandtrust.org/>

<https://www.bard.edu/mba/about/nyclab/>

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I. Introduction

This Roadmap has been developed through a partnership between The Kingston Land Trust (KLT), based in Kingston, New York, and a team of Bard College’s MBA in Sustainability students based out of New York City. Every year, this program issues an RFP for sustainability projects for its NYCLab class. As the focus of that class, NYCLab student consultants work in small teams to solve sustainability-related problems for a client. The Kingston Land Trust applied in June 2020 and was selected by the program along with seven other projects. The Bard MBA student team consisted of four members: Caroline Bailey, Zoe Beckerman, Kiana Cardwell, and Justin McAmmond. The KLT team consisted of two members: Head of Cultural Engagement, Shaniqua Bowden and Executive Director, Julia Farr.

The KLT’s decision to apply with this triple bottom line eco-dwelling proposal was due to their participation in a Rapid Re-Housing Group that consisted of most of the housing organizations that serve Kingston, which had formed in response to COVID-19’s impact on the unhoused population. The group was seeking to establish ten small, independent dwelling units to house single individuals with compromised immune systems who could not safely stay in shelters where they would be exposed to so many other people. The KLT joined this group to help identify an appropriate piece of land for the effort, and saw an opportunity to bring in more capacity by working with the Bard team to explore how to offer even more, through an eco approach to the site including land protection, site and building design, ecological stewardship, and land-based rehabilitative and supportive programming for residents.

The Kingston Land Trust is a conservation land trust that inspires and facilitates land protection through planning, design, programs, and outreach. Their vision is to make land accessible to the community while practicing socially responsible conservation. The organization uses innovative and inclusive programming to encourage their diverse community to develop a sustainable and healthy relationship with the land and other living beings. The Kingston Land Trust’s ‘*Land For Homes*’¹ initiative has been used as a case study throughout the entirety of this Roadmap. Land For Homes is the KLT’s way of supporting equitable and responsible

¹“Land for Homes.” Kingston Land Trust, kingstonlandtrust.org/initiatives/land-homes.

development so that residents have access to decent housing, in addition to open spaces like trails, gardens, and parks. The KLT has been studying the Community Land Trust (CLT) model for permanently affordable housing for several years, determining the best way to help develop an example in the Kingston area. This report is a reflection of much of what the KLT has considered during this process. A CLT, described in *Section VI, Planning*, is distinct from a Conservation Land Trust, but the two can merge or collaborate as they share many common goals. Supporting CLT development is one of several ways that the KLT has determined that Conservation Land Trusts can meaningfully contribute to providing access to land for housing that also prioritizes land stewardship.

Over the course of nine months, The Kingston Land Trust and the Bard MBA team have worked together to discuss and develop the contents of this document, such that the final Roadmap fosters inspiration, innovation, and collaboration for all of its readers. It was created as an open-source document for land trusts, housing organizations, municipalities, government parties, community leaders, stakeholders, and all peoples involved in or interested in the development of affordable housing that also nurtures the land and community.

The Kingston Land Trust has created this resource to benefit affordable housing efforts on a far-reaching basis, both within and beyond the Kingston community. This resource can support other organizations such as other land trusts or nonprofits who specialize in land protection and services, and who share the goal of supporting affordable housing efforts. This resource can help those organizations get started and provide guidance, structure, and recommendations for planning and implementation. This resource also lists examples of how The Kingston Land Trust has specifically approached this in the Kingston community. Their example serves as a helpful frame of reference for how this can be put into practice.

Included in this Roadmap is a menu of options intended to be tailored to any community based on its specific needs and/or what resources are available. These options have been created through contextual research, collaborator and stakeholder interviews, and case studies of past affordable eco-dwelling projects. Callouts are included throughout the Roadmap to highlight what specific organizations can provide or contribute during each stage of the project.

As an organization with a collaborative approach and interest in community-wide needs and engagement, The Kingston Land Trust is in a strong position to support collaboration as it relates to affordable housing initiatives. The Kingston Land Trust, as well as other similar organizations who might adopt recommendations presented in this Roadmap, can serve as connectors and aggregators of community resources, in addition to providing services with land acquisition and protection as a land conservation-based organization.

II. The Case for Conservation and Affordable Housing Collaboration

Rapidly changing cities are facing the urgent challenge of ensuring our communities have a place for everyone. However, land trusts and housing organizations have historically been at odds with each other regarding the intersection of land development and environmental stewardship. Often, housing projects lack a Triple Bottom Line² vision that allows socially responsible conservation of the land while helping to stabilize the neighborhood in the face of displacement and gentrification. Land trusts have the potential to offer land protection and a reduced carbon footprint, in addition to providing guidance in ensuring the project is sustainable and resilient, and addresses challenges relating to the human needs of shelter, health, and employment. This Roadmap aims to change this currently unavailing relationship between conservation and housing development land trusts and housing organizations by providing ways in which both resources can work together toward creating eco-dwellings³ with lasting affordability in equitable neighborhoods while

² *'Triple Bottom Line'* refers to people (social), planet (environmental), and profit (financial)

³ *'Eco dwelling'* refers to tiny homes, efficiency cottages, accessory dwelling units, etc.

practicing land conservation.

There have been many efforts across the country by nonprofits to create small affordable dwellings, like tiny homes, efficiency cottages, and accessory dwelling units. Although there are examples of green building practices in some of these cases, our research has not found many examples of land trusts playing a role in supporting this type of housing development, and we think this is a missed opportunity. This Roadmap is therefore a call to action for land trusts and housing organizations to collaborate toward common goals, and for land trusts to consider expanding their scope to include and accommodate urban needs. Housing development does not have to inherently be a threat to land conservation if land trusts offer their perspective, strengths and tools to encourage the built environment to support the natural environment, and vice versa. If land trusts are not part of the conversation and at the table on housing development planning, conservation values will continue to be at risk.

III. Pre-Planning: Partnerships and Coalition Building

A. Getting Started

In Kingston, there is a Request for Proposal (RFP) that may provide an opportunity for conservation and housing fields to work together. Currently the RFP requires one organization to provide Case Management, Site Selection, and Land Management services to facilitate the construction of a Tiny Homes Community.⁴ It may be rare to find one organization that is prepared to provide all three of these services at a high level of expertise but by utilizing the collaborative systems already established in their communities affordable housing and land conservation groups can work together to fill this need.

Land trusts can conduct outreach to housing organizations and potential partners within the community to propose coming together to develop a project like the one proposed in the Kingston, NY RFP. Land trusts, with their network of community allies and knowledge of municipal processes and ecological standards, could be a key resource for housing organizations looking to take on projects like this in a way that considers the long term impacts of the development post-construction.

B. Convening Partners and Stakeholders

Identifying a list of partners and stakeholders is an important component to the pre-planning stage. This may include both established partners and existing stakeholders, as well as yet-unidentified prospects.

1. Housing Organizations: It's important to form a relationship with established housing organizations who bring expertise and experience and to map out which organizations specialize in different areas. It's also essential to have an understanding of the local affordable housing landscape. In the Kingston area, organizations involved in these efforts include Family of Woodstock, Rural Ulster Preservation Company (RUPCO),⁵ the Kingston City Land Bank,⁶

⁴ "Enterprise Announces Program Participants for the New York State Anti-Displacement Learning Network in Partnership with Attorney General ," Enterprise Community Partners, www.enterprisecommunity.org/news-and-events/news-releases/enterprise-announces-program-participants-new-york-state-anti.

⁵ "RUPCO." <https://rupco.org/>

⁶ "Kingston City Land Bank." <https://kingstoncitylandbank.org/>

Catholic Charities, Ulster County Habitat for Humanity,⁷ Ulster YouthBuild,⁸ and the Real Kingston Tenants Union.⁹

2. Future Residents: Consider the potential residents who will live in the housing and their perspective and needs. Identifying key partners who work on the ground with potential residents, such as Darmstadt Shelter of Family of Woodstock¹⁰ and the Kingston Mutual Aid Network,¹¹ is an important part of this process. Then their staff may be interviewed, and they may also be able to support facilitating surveys to people they work with, which can provide invaluable insight.
3. Builders: It's also important to consider building organizations who can help provide recommendations with construction and implementation. In the Kingston area, these organizations include RUPCO and Ulster YouthBuild.
4. Designers: The KLT engages local design professionals as well as college and high school architecture and design classes from our surrounding institutions to inspire landscape and dwelling design that is integrated into the urban fabric. The KLT has partnered with the local youth program at the Kingston YMCA Farm Project to train high school youth to design community spaces that are relevant to their vision for equitable and nourishing green and cultural open spaces.
5. Land-related Funders: Identifying land-related funders is also a critical part of the pre-planning stage. There are different sources that should be considered on the local community and city level, state level, federal level, and also grants and foundations that specialize in supporting affordable housing efforts.

For the city of Kingston, options to consider include resources provided on the CoreData.nyc website, which includes funding resources for locations in New York State and in some cases beyond New York City.¹² For land and financing, possible funding sources include the Land Trust Alliance, Community Restoration Fund (CRF), National Housing Trust Fund (NHTF), and the Housing Development Fund (HDF). The Housing Development Fund specializes in supporting nonprofits with affordable housing efforts, including Community Land Trust, and currently supports these efforts in New York and Connecticut.¹³

C. Community Engagement: Importance and Strategies

The process of engaging community members starts with identifying who to interview including members from multiple stakeholder groups including: potential collaborators, residents, and neighbors outside of the specific site region. From there the organization would establish an objective for the interview and questions focusing on key areas such as: best practices to implement, gaps in current

⁷ "Ulster County Habitat for Humanity." <https://ulsterhabitat.org/>

⁸ Home Page." Ulster YouthBuild. <https://ulsteryouthbuild.weebly.com/>

⁹ Ryan, Patrick K. "Ulster County Housing Action Plan." https://Ulstercountyny.gov/Sites/Default/Files/Documents/Planning/2021_uc_hap.Pdf, 2021.

¹⁰ "Darmstadt Shelter." Family of Woodstock, www.familyofwoodstockinc.org/services-for-adults/services-to-the-homeless/darmstadt-shelter/.

¹¹ "Kingston Mutual Aid" <https://www.kingstonmutualaid.org/>

¹² Directory of NYC Housing Programs; <https://furmancenter.org/coredata/directory/search/eyJyZXN1bHRfcGFnZSI6ImNvcnVkaXZlYXRhXC9kaXJlY3RvcnIjL3NlYXJjaCis1mNhdGVnb3J5IjoiMjIn0.>

¹³ Housing Development Fund - HDF - Free Homebuyer Counseling in CT, NY, MA; <https://hdfconnects.org/>.

system, potential challenges to avoid, and opportunities to consider. Organizing and structuring the interview and/or survey to reach these objectives is instrumental to creating an effective survey that provides actionable insights. Examples of questions we have used in community engagement discussions are listed below:

1. What are the opportunities and challenges to incorporate green building into affordable housing models?
2. How financially viable is your affordable housing model?
3. How can you engage residents with the land stewardship ethos?
4. What are the opportunities to build in profit generating activities (e.g. mixed income, rent vs. own, operations and maintenance provided in-kind by residents, agriculture, craft, store, tourism, skills training, etc.)?

Effective community engagement is essential to ensure that the affordable housing efforts are meeting community needs and including a variety of key voices and perspectives. Community engagement strategies include interviewing members of the community, hosting listening sessions and design sessions, and conducting surveys for community members such as the future residents whom the affordable housing efforts are intended to support. This approach helps ensure that residents' needs will be met, and that there is a community-wide network of contributors and overall community support. If the community's input is not included, the initiative could face various risks, including creating conflict with other organizations or members of the community, missing potential opportunities for collaboration or funding, and ultimately, not serving the future residents or community in ways that are relevant or most conducive to them. Thus, collaboration with effective community engagement is the most sustainable approach. This can be a more efficient and impactful use of public resources, can reduce the likelihood of replication of efforts, and can maximize success for tenants.¹⁴

Community Engagement Approaches

There are several community engagement approaches considered for Community Land Trusts, which can also be beneficial for other organizations seeking to support affordable housing efforts such as land trusts. These are the Core Group Organizing and Community Organizing approaches, and there are pros and cons to consider for each approach, as outlined below.¹⁵

1. Core Group Organizing
 - a. Pros:
 - i. Approaching influential individuals and institutions and ask them for support
 - ii. Faster development, flying below radar of potential opponents, building credibility, capacity support
 - b. Cons:
 - i. Market risk
 - ii. Reputation of a small core group and political affiliations
 - iii. Risk of being perceived as elitist
2. Community Organizing

¹⁴ U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT. "Promoting Partnerships to Utilize Housing as a Platform for Improving Quality of Life." <https://www.hud.gov/sites/documents/PIH2011-51.PDF>, 20 Sept. 2011.

¹⁵ Davis, John Emmeus. "Starting a Community Land Trust"; <https://community-wealth.org/sites/clone.community-wealth.org/files/downloads/tool-5-ed-and-organizing.pdf>.

- a. Pros:
 - i. Awareness and acceptance in the community
 - ii. Recruitment beyond the usual suspects, with opportunities identified along the way through the community network
 - iii. Marketing opportunities in the community
 - iv. More diverse fundraising opportunities
- b. Cons:
 - i. Time-consuming
 - ii. High expectations
 - iii. Subject to many opinions and speculation

Both approaches should be considered for each location and project for relevance and feasibility. In Kingston, NY after conducting interviews and research, the Community Organizing approach was recommended to The Kingston Land Trust for their approach with the ‘*Land for Homes*’ initiative. This approach is also consistent with the KLT’s overall approach towards collaboration in the community, such as with their work supporting protection and community ownership of the Pine Street African Burial Ground¹⁶ and the Kingston Greenline.¹⁷

D. Community Engagement: Case Examples

1. Albany Community Land Trust

- a. For other nonprofits and Community Land Trust that have established affordable housing initiatives, such as the Albany Land Trust, they’ve demonstrated that a collaborative approach can be instrumental to implementing affordable housing projects.
- b. Their collaborators and respective roles are:
 - i. The Affordable Housing Partnership (AHP) and Homeownership Center which oversee housing management
 - ii. The Community Loan Fund of the Capital Region which acts as a key funding source
 - iii. The United Tenants of Albany which supports tenant recruitment and placement.¹⁸

It can therefore be extremely beneficial, especially as a nonprofit and with the prioritization of community needs and values, to form these key partnerships in different areas of expertise. It’s essential when forming these partnerships to be aware of each organization’s area of expertise and limitations, in order to identify areas where different organizations can support each other and maximize impact.¹⁹

2. Housing Boulder

- a. Housing Boulder of Colorado established an objective of inclusive participation with an approach intended to be replicated in other city projects as well as in other communities nationwide.²⁰

¹⁶ “Pine St. African Burial Ground.” *Harambee*, pinestreetafricanburialground.org.

¹⁷ “Kingston Greenline.” *Kingston Land Trust*, kingstonlandtrust.org/kingstongreenline.

¹⁸ About ACLT.” Albany CLT, Albany Community Land Trust, albanyclt.com/about-aclt.html

¹⁹ U.S. Department of Housing and Urban Development. “From the Ground Up: Creating Sustainable Partnerships between Public Housing Authorities and Workforce Investment Boards.” https://www.hud.gov/Sites/Documents/14_DOL_PUBLICATION.PDF, 2014.

²⁰ Code for America. “Engage the Community to Shape a New Affordable Housing Strategy.” Code for America, Becky Boone, Code for America Catherine Bracy, Code for America David Driskell, City of Boulder, CO Liz Hanson, City

- b. The shared goals of the project were to:
 - i. Stimulate interactive dialogue and collaboration with a cross-section of the community
 - ii. Increase participation and move from one-way communication to multi-way dialogue
 - iii. Create a new approach to community engagement that can be replicated on other projects and in other communities

Effective collaboration and community engagement supports vulnerable populations and community needs, and helps bring greater awareness and attention to them.²¹ It also helps increase the understanding of relevant funding streams and can be attractive to funders, can help reinforce a systems-level response, and effectively includes key stakeholders throughout the process, who can provide invaluable recommendations and contributions.

E. Management Team

In fostering a shared purpose, team members can understand and appreciate the main objectives of the project and ensure focus on collective goals. In showing social support, team members can provide emotional support to each other through encouragement and recognizing each team member's individual contributions. In allowing all voices to be heard, each team member can provide input to the project process. Members of the management team could include representatives of the leaseholder, local foundations, social services agencies, tenant rights organizations, community development corporations, religious organizations, and banks.

F. Housing and Land Shared Ownership and Protection Options

In the case of the City of Kingston RFP, defining different roles that could benefit from being tackled by a coalition of organizations, the land trust could play the role of holding title to the land and forever protecting its affordability and conservation values. In this case, the land trust could then lease the land to a housing organization partner to develop and own the housing built on the land. The Ground lease could restrict the sale of the housing by the housing nonprofit to only be able to sell to another nonprofit with an aligned mission. The Community Land Trust model, ground leases, and conservation easements are explained in more detail in *Section VI, Planning*.

G. Housing Organization's Role: Pre-Planning

Affordable housing organizations are well-positioned to use their deep understanding of the local housing ecosystem to identify the most critical stakeholders to be involved in the development process. These organizations can convene discussion forums, share the most up-to-date and representative understanding of community needs, and guide future resident engagement strategy. Well-established housing organizations garner the respect and credibility that mobilizes communities toward common goals and serve as invaluable partners for land stewardship organizations' foray into affordable housing.

of Boulder Nicole Neditch, Code for America Preston Rhea, Code for America, www.codeforamerica.org/how-tos/engage-community-to-shape-new-housing-strategy.

²¹ U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT. "Promoting Partnerships to Utilize Housing as a Platform for Improving Quality of Life." <https://www.hud.gov/Sites/Documents/PIH2011-51.PDF>, 20 Sept. 2011.

IV. Timeline & Growth Plan

A. Integrated Community Design Process

It is important to integrate multiple stakeholders into the planning and design process. Community engagement, including an assessment of needs and priorities, along with an understanding of regulation requirements from the beginning and throughout the process, is critical. When moving to the Design phase it is important to incorporate the community purpose and vision in the concept, schematic designs, site selection and construction processes.

1. **Planning:** The community engagement process should include a needs assessment and prioritization process. Site Selection (discussed further in *Section VI, Planning*) should take into account accessibility and opportunity for community integration. Timelines and fees associated with the regulation process should be considered early in the planning process.
 - a. Site Selection
 - i. Accessibility: Site should be located in walking distance of amenities, or in walking distance of public transportation that reaches amenities
 - ii. A welcoming neighborhood can be fostered through collaboration with neighboring communities and businesses as well as proactive integration of future residents.
 - iii. Proximity to other land trust projects can increase synergies and collaboration between sites, through established processes and partnerships.
2. **Integrated Design:**²² The concept design of the space should incorporate natural preservation, sustainable materials, and system interaction. The schematic infrastructure design plans should address resource usage, monitoring, reporting, and maintenance to establish consistency and transparency. The construction design documents for the space should ensure that the space meets specifications and is structurally sound for multiple generations. Siting and orientation of the dwellings should be informed by the sun for passive cooling and heating, and should preserve natural features on site, like trees, streams and habitat. Views from inside the dwellings and also from the street should be optimized for a pleasing experience for residents and community members, emphasizing the natural features of the site.
3. **Construction:** The final construction of a sustainable building should incorporate aspects of the previous phases ensuring that the community and residents' needs are addressed throughout the process. All stakeholders should be aware of the mission and purpose of the space. Building materials should be sourced locally. A land trust may be able to provide sustainable harvested lumber from their land.

B. Timeline Comparison

This section includes details from case studies across the country on the process of acquiring land all the way through to having multiple dwellings constructed. Having an understanding of these timelines will help set reasonable expectations and identify priorities for similar projects. Local municipalities often move quickly when distributing funds to initiate projects that drive impact which can lead to RFP's with very quick turnaround times. The RFP application process mentioned previously in this Roadmap

²² Living Building challenge integrated design process; Pg 179.
https://drive.google.com/drive/u/1/folders/18bMC_x2mEp-oDPyao8DiS_jRezqppPh

was to be completed in 25 days. Land conservation groups can be instrumental in adding efficiencies at many stages of the development process. They can do this through their ability to build capacity by gathering resources and collaborators, and by providing risk mitigating process guidance related to the usage of the land.

Below is a comparison of the timelines of three sustainable communities that utilized an integrated process for developments. Each of these projects utilized multi-phased approaches to construction to allow for flexibility and engagement. From this research, it is clear that villages of this type can take many years to complete, but learnings from these timelines emphasize the importance of proactive planning, site selection, and regulation compliance to maximize efficiency.

1. Second Wind Cottages²³
 - a. Began with initial crowdfunding from indiegogo and volunteers for development over 6 years.
 - b. This village of cottages was completed through a multi-phased construction approach with 6 homes in 2012 to 18 homes in 2018.
2. Austin Community - Community First! Village
 - a. This community utilized a multi-phased approach with a long term-vision that was established in 2004. This project started with 21 acres and is now 51 acres.²⁴
 - b. Land was acquired in 2014 and ground was broken in 2015 after regulations and planning were complete. As of 2019, the community was 90% full and adding a second village after 15 years.²⁵
3. Omega Center - Living Future Project
 - a. The Omega Center is an education center integrated into community systems.²⁶
 - b. This center completed a 3 year phased construction approach where they increased sustainability through modifications and additions from year to year.²⁷ Land was acquired in 2006 with ground breaking in 2007, and start of construction in 2008 to be finished in 2009.²⁸

V. Financial Planning

A. Financial Plan: Budget

Creating an exhaustive list of budget items requires a deep understanding of the details of the project, paying particular attention to: acquisition costs, allocation between residential and program space, unit configuration and size, construction materials and methods, desired amenities, and existing site conditions.

²³ Second Wind Cottage FAQ; <https://www.secondwindcottages.org/>.

²⁴ Austin Community Village; <https://www.austin360.com/entertainmentlife/20190517/how-austins-tiny-home-village-for-homeless-people-its-becoming-national-model>.

²⁵ Austin Community village case study, Urban Land Institute.

<https://ulidigitalmarketing.blob.core.windows.net/ulidcnc/2019/02/CFV-CaseStudy-HD.pdf>.

²⁶ BNIM Omega Center Specifications; <https://www.bnim.com/project/omega-center-sustainable-living>.

²⁷ Living Future Omega Center Case Study;

<https://living-future.org/lbc/case-studies/omega-center-for-sustainable-living/>.

²⁸ BNIM Omega Center flow book;

https://www.eomega.org/sites/default/files/resources/bnim_omega_flow_book_0.pdf

Key budgeting cost categories include:

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|--|--|
| <p><i>Land Acquisition*</i></p> <p><i>Appraisal*</i></p> <p><i>Title and Recording Fee*</i></p> <p><i>Legal Services (ie. transaction)*</i></p> <p><i>Tax Abatement/Exemption/Reduction Filing</i></p> <p><i>Property Surveys*</i></p> <p><i>Syndication</i></p> <p><i>Private Lender Fee</i></p> <p><i>Public Lender Fee</i></p> <p><i>Market Study</i></p> <p><i>Environmental Assessment*</i></p> <p><i>Accounting/Auditing/Cost Certification</i></p> <p><i>Real Estate Taxes*</i></p> | <p><i>Basic Construction</i></p> <p><i>Construction Contingency</i></p> <p><i>Engineering Services (ie. test borings)</i></p> <p><i>Architect and Consultant Services</i></p> <p><i>Developer Fee</i></p> <p><i>Construction Management Services</i></p> <p><i>Construction Period Insurance</i></p> <p><i>Construction Period Water/Sewer</i></p> <p><i>Furniture and Equipment</i></p> <p><i>Marketing and Leasing Services</i></p> <p><i>Operating Reserve</i></p> <p><i>Lease-up Reserve</i></p> |
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Note that the items with an asterix (*) indicate cost items generally taken on by a land trust.

Key budgeting cost categories specific to affordable housing tax credit projects include:

| | |
|--|--|
| <p><i>Application</i></p> <p><i>Reservation and Compliance</i></p> <p><i>Partnership Publication</i></p> <p><i>Partnership Management Services</i></p> <p><i>Social Services Reserve</i></p> | <p><i>Tax Opinion</i></p> <p><i>Tax Abatement Consulting Services</i></p> <p><i>Interest on Bridge Loan</i></p> <p><i>Other Permanent Financing Fees</i></p> |
|--|--|

It is recommended that housing organizations create a list of budget categories for all anticipated project costs and begin collecting quotes early to forecast spending, future budget allocations, and any additional funding requirements. A rough order of magnitude can be assigned to unknown costs to ensure any forecasts are robust and comprehensive.

B. Financial Plan: Funding

It is important to secure robust funding from multiple sources, noting that private funding options often provide more control and freedom by the landholder or building owner. The following resources have been identified as sources of public and private funding, tax credits, and opportunities specifically available for affordable housing projects within New York State:

1. Public Sources and Federal Programs

- a. HOME Investment Partnerships Program (HOME)²⁹
- b. Community Development Block Grant (CDBG)³⁰

²⁹ "HOME Investment Partnerships Program - CPD: HUD.gov / U.S. Department of Housing and Urban Development (HUD)." HOME Investment Partnerships Program - CPD | HUD.gov / U.S. Department of Housing and Urban Development (HUD), www.hud.gov/program_offices/comm_planning/affordablehousing/programs/home/.

³⁰ "CDBG: An Action Guide to the Community Development Block Grant Program." *CDBG: An Action Guide to the Community Development Block Grant Program | The Homeless Hub*, www.homelesshub.ca/resource/cdbg-action-guide-community-development-block-grant-program.

2. Private Sources
 - a. NYS Affordable Housing Corporation³¹
 - b. Energy Improvement Corp Energize NY Benefit Financing Program (PACE)³²
3. Tax Credits
 - a. NYS Low Income Housing Tax Credit Program³³
4. Possibilities in New York State
 - a. New York State Homes and Community Renewal (HCR)³⁴
 - b. New York State HOME Program³⁵
 - c. Enterprise Community Partners³⁶

C. Role of Housing Organization

The housing organization would be responsible for securing funding for the affordable housing project, including approaching the City, fundraising, etc. The land trust would be responsible for supporting the initiative by providing alternative funding options, including community development block grants, environmental justice area grants, and access to Community Preservation Funds.

VI. Planning

A. Permanent Protection & Affordability

A land trust can support the development of permanent protection and affordability through conservation-based affordable housing through several approaches, including the following:

1. Community Land Trust (CLT) model

CLTs are nonprofit organizations governed by the residents and community members that control land and development through shared assets and shared equity homeownership.³⁷ The main goal of a Community Land Trust for affordable housing is to build, operate, and maintain permanently affordable housing for generations of lower income families. Families or individuals are able to purchase a home for a more affordable price because they are only buying the house, not the land the house is on. The land is owned by the CLT. Homeowners lease the land from the CLT in what are often long-term, 99-year, renewable leases.³⁸ Homeowners, in turn, agree to sell their homes at a restricted price to ensure that it remains affordable in perpetuity.

A conservation land trust might decide to expand into, fledge, or form a CLT for the purposes of community ownership of land and housing. This is a model that the KLT has been exploring and

³¹ "Affordable Housing Corporation (AHC) Grantee Forms & Information." *Homes and Community Renewal*, hcr.ny.gov/affordable-housing-corporation-ahc-grantee-forms-information.

³² "Commercial PACE: EIC PACE: New York." *Eicpace*, www.eicpace.org/.

³³ "Low Income Housing Tax Credit Program." *Homes and Community Renewal*, hcr.ny.gov/low-income-housing-tax-credit-program.

³⁴ "Community Development Block Grant." *Homes and Community Renewal*, hcr.ny.gov/community-development-block-grant.

³⁵ "NYS HOME Program." *Homes and Community Renewal*, hcr.ny.gov/nys-home-program.

³⁶ Enterprise Community Partners, and Enterprise Community Partners. "New York." *Enterprise Community Partners*, 10 Feb. 1970, www.enterprisecommunity.org/where-we-work/new-york.

³⁷ *Community Land Trusts*. Grounded Solutions, 2021, groundedsolutions.org/strengthening-neighborhoods/community-land-trusts.

³⁸ *Community Land Trust*. Inclusionary Housing, 2021, inclusionaryhousing.org/making-it-work/admin/staffing-and-outsourcing-options/community-land-trust/.

is now helping to develop with an independent working group in Kingston. In the CLT ownership model, as it might relate to eco-dwellings, each resident owns their house and leases the land from the CLT. The CLT would be made up of a tripartite board, including a third of the members being homeowners/leaseholders. In this case, the CLT would restrict the sale of each home to another low income homebuyer. The equity would be shared at the time of sale.

2. Ground Leases + Deed Covenants

- a. There are two key ways to protect the affordability of privately owned housing units
 - i. Ground Lease: A private or public conservation organization can maintain ownership of the land and rent it to the owner of the building on it through a ground lease that can include resale restrictions³⁹. Ground leases are commonly held by conservation land trusts, Community Land Trusts, federal land protection organizations such as the Forest Service, which hosts a “Cabin Program” with a 20 year ground lease that is renewable on an annual basis. CLTs hold 99-year ground leases that are inheritable. A conservation land trust can establish a ground lease with a housing nonprofit that owns the housing units and provides them to residents in the form of shelters, transitional housing units or affordable rentals.
 - ii. Deed Covenant: A legal agreement that can be placed on the property, detailing resale price restrictions
- b. Ground leases can be more challenging to do than deed covenants, but have advantages:
 - i. Ground leases are often better able to withstand legal challenges, with enforcement of leases more clear and binding.
 - ii. Deed covenants are often sanctioned by statute and correcting violations can be more murky.
 - iii. Stewardship: Through ground leases, land stewardship organizations are well-positioned to support homeowners of resale-restricted housing when maintenance or management problems arise.
 - iv. Equity: A land trust, or any nonprofit organization, that owns and leases land often has access to resources and influence to ensure that public benefits are equitably shared and market pressures don’t displace lower-income residents.
 - v. Empowerment: Ground leases can leverage land stewards to be more accountable to residents and encourage homeowner engagement and community organizing.⁴⁰
- c. In developing a ground-lease model, land trusts have the power to force a broader discussion about community needs, use, and land trusts control in relation to land. Rather than giving homeowners private use of the land, the land trust can write flexibility into the model, redesigning the ground lease for community control. This reimagining can make non-housing uses like community centers, playgrounds, parks, gardens, and conservation easements more feasible.⁴¹

³⁹ Davis, John Emmeus. “Ground Leasing Without Tears.” *Shelterforce*, 4 Nov. 2019, shelterforce.org/2014/01/29/ground_leasing_without_tears/.

⁴⁰ Williams, Olivia, et al. “Controlling Land Collectively: The CLT Ground Lease Reimagined.” *Shelterforce*, 2 May 2018, shelterforce.org/2018/05/02/controlling-land-collectively-the-clt-ground-lease-reimagined/.

⁴¹ *Ibid*, pg. 1

- d. Non-housing uses take forethought, financial planning, and potentially different funding sources, which can often be harder to obtain. Decisions about what can happen with the land usually happen at the time of purchase, particularly if external funding was used to acquire the land. For this reason, it is important to establish the role of community control explicitly during new land acquisition.⁴²

3. Conservation Easements

Affordable housing organizations and land trusts can partner together to ensure that land conservation measures integrate social, economic, and environmental objectives. One way that this can happen is through conservation easements:

- a. Land trusts work to conserve land by acquiring land or conservation easements for stewardship and management.
- b. “A conservation easement is a voluntary legal agreement between a landowner and a land trust or government agency that permanently limits uses of the land in order to protect its conservation values.”⁴³
- c. Deed-restricted conservation easements help protect natural resources, water quality, wildlife habitat, or scenery or protect the land for certain types of use, such as farming.⁴⁴
- d. Depending on the site context, conservation can take on various forms and should be defined through a strategic land conservation planning process that reflects the local community’s culture and priorities.
- e. Land inventory and analysis, community asset mapping, and green infrastructure potential can be used to optimize land-use design decisions.
- f. Conservation easements can limit the amount and type of development, along with fixed building envelopes, building number and size restrictions, ensuring public access to recreational lands, and preservation of active farmlands or animal migration routes.
- g. Most conservation easements are donated. Private landowners that donate a conservation easement may be eligible for significant tax benefits, if it meets the requirements of federal law. If the land has high conservation value, there are federal, state, and local programs that provide funding to purchase easements on farm and ranch land.⁴⁵
- h. Conservation easements are permanent protections that “run with the land,” meaning the current owner and all future owners are subject to the easement.
- i. The role of a land trust is to make sure that the conservation easement restrictions are being followed and that activities on the land are consistent with the easement.⁴⁶
- j. When a land trust holds a conservation easement they take on the land stewardship responsibilities. There is an opportunity to incorporate land stewardship activities into the affordable housing model and into residents’ roles and responsibilities.

4. Housing Model and Sustaining Value

⁴² Ibid.

⁴³ “What You Can Do.” *Land Trust Alliance*, 14 Nov. 2017, www.landtrustalliance.org/what-you-can-do/conserves-your-land/questions.

⁴⁴ Briechle, Kendra J. “Conservation-Based Affordable Housing.” *The Conservation Fund*, June 2006, www.conservationfund.org/images/resources/Conservation-Based-Affordable-Housing-Study-all-9-06-lo-res.pdf.

⁴⁵ “What You Can Do.” *Land Trust Alliance*, 14 Nov. 2017, www.landtrustalliance.org/what-you-can-do/conserves-your-land/questions.

⁴⁶ Ibid, pg. 1.

This section will outline the ways several organizations have implemented housing models for residents and offered educational programs. These offerings can help contribute to the long term sustainability for the housing operations and the people who reside there.

a. Housing Model Ownership Structure: Atlanta Land Trust

- i. The Community Land Trust model allows tenants to attain and sustain homeownership.
- ii. In return, the homeowner agrees to sell the home at resale-restricted and affordable pricing to another lower income homebuyer in the future.
- iii. Outcome: the homeowner is able to successfully own a home and build wealth from the investment.
- iv. The organization is able to preserve the public's investment in the affordable home permanently to tenants into the future.

b. When the Homeowner Decides to Sell, the Resale Formula Is Used to Determine the Resale Value

- i. The Atlanta Land Trust uses two different resale formulas for this:
 1. One permits homeowners to realize 25% of the appreciated value of the home.
 2. The other uses average income growth to determine how much equity a homeowner can realize.

c. Education, Stewardship, and Sustaining Value

- i. Offering home ownership educational programs is beneficial.
- ii. Opportunity Chicago:
 1. Found it's important to track progress along the way and make updates as needed.
 2. Opportunity Chicago collaborated with community partners to make this happen.
 3. Opportunity Chicago engaged potential employers to ensure training programs were aligned with the demand in the local labor market.
- iii. Hybrid models: affordable housing in commercial buildings, and partnering with that company or another organization nearby to provide job training support, and possibly even recruitment.

d. Educational Job Services

- i. Bringing employment services to affordable housing locations has been an effective strategy.
- ii. Developing a job stable recruitment pipeline can help this effort.
- iii. Establishing key educational and job training partners, and offering organized onsite and offsite training opportunities has been successful for organizations such as the Boston Housing Authority and Boston Private Industry Council.⁴⁷ They also ensured there were coordinators hired who specialized in providing support for career training and placement services.

e. Transportation Accessibility

⁴⁷ U.S. Department of Housing and Urban Development. "From the Ground Up: Creating Sustainable Partnerships between Public Housing Authorities and Workforce Investment Boards." https://www.hud.gov/sites/documents/14_DOL_PUBLICATION.PDF, 2014.

- i. Lack of accessible transportation has contributed to affordable housing barriers.⁴⁸
- ii. Transportation must be considered for the housing model and also job opportunities.

B. Facilitate Land Acquisition, Access and Site Selection

1. Zoning Regulations and Guidelines

Zoning regulations limit where new developments can occur and require collaboration with municipal officials. These limitations are in place to protect vulnerable land areas and ensure effective land management. Proactive documentation along with adherence to deadlines relationship development can mitigate zoning challenges.

- a. Guidelines for new developments must be followed at federal, state, county, and city levels. Starting the planning at the micro level can reveal regulation synergies and establish norms.
- b. Planning and adaptability can result in rezoning or restriction exemption.
- c. A good site plan includes thorough documentation regarding the selection of the site and its mitigation of environmental risk.

2. Floodplain Restrictions Guidelines

Floodplain Restrictions limit development of land in the floodplain within a community subject to a one-percent or greater chance of flooding in any given year. It is also commonly referred to as the "base floodplain" or "one-hundred-year floodplain."

- a. Most standards for development prohibit development in 100-year floodplain sections and many plans for multi generational sustainability encourage freeboard construction above the 500 year floodplain level subject to a 0.2% annual chance flood approach.
- b. Actionable hydrologic (precipitation) and hydraulic (physical systems) data and methods that integrate current and future changes in flooding based on climate science into the design and space operations can mitigate flood risk and lead to restriction exemption or flexibility.⁴⁹

3. Housing Density Limits Guidelines

Housing Density Limits ensure that activities are adequately distributed through limitations within interior and exterior spaces. Distribution can include limits on types of residential and retail activities as well as the number of lots in a space. Environmental issues such as overcrowding, heat islands, and system isolation can be addressed through this distribution.

- a. Areas near existing or planned transit stations or along bus routes are optimal to target areas with higher population densities. This builds synergies within communities and ensures access to necessities.
- b. Mixed-use development allows retail, community, and residential activities to continue simultaneously and builds connections in the system.
- c. Historically, lower and middle class residents have less access to open spaces and experience higher levels of pollutant exposure. Creating a plan to reserve open space for community usage helps to reduce inequalities and encourage environmental justice.

4. Environmental and Residential Restrictions Guidelines

⁴⁸ The Leadership Conference Education Fund. "Getting Home: Transportation Equity and Access to Affordable Housing." [Http://www.civilrightsdocs.info/Pdf/Docs/Transportation/Getting-Home-july21.Pdf](http://www.civilrightsdocs.info/Pdf/Docs/Transportation/Getting-Home-july21.Pdf).

⁴⁹ Dudek 40 Civil Engineering (<https://dudek.com>)

- a. Planning should focus on the community's prioritization of elements such as site selection, energy usage, water conservation. Understanding what the potential residents need and want through communication and engagement is critical.
- b. Educational opportunities for education related to protecting natural habitats should be integrated into the culture from planning to residential activities.

5. Utility Infrastructure Barriers Guidelines

Utility Infrastructure Barriers in a modern society limit and add time to the development of new buildings. Spaces must be connected to electricity and water services to meet regulation standards as well as the needs of residents.

- a. Time bound application processes are required for new utility installation. Integration of experts should include, but not be limited to civil engineers, professional planners, attorneys and radio frequency engineers.
- b. Ensuring that methods of engagement take into account science-based thresholds related to natural capacities can result in cost effective operations.

C. Housing Organization's Role: Recruitment of Residents

The housing organization would be responsible for the recruitment of residents for the affordable housing project. This process would begin with gathering census data of the City or neighborhood in which the project is being developed and conducting a community needs assessment. It will then be critical to engage with stakeholders to ensure that their wants and needs are being adequately addressed and that they are involved in the planning process from a very early stage.

Benefits of community engagement driven by the housing organization include:

- 1. Fostering leadership, betterment, and improved quality of life among residents
- 2. Creating community control of land and neighborhoods
- 3. Building community and promoting civic engagement
- 4. Ensuring resident-driven organizational decision-making and strategic planning
- 5. Bolstering organizational sustainability and resiliency

If a strong community engagement approach is developed into the affordable housing project, this strategy may be able to be incorporated into other projects and initiatives in the community, including initiatives led or supported by the land trust.

VII. Design

A. Designing for Sustainable Land Management

Land trusts can work with residents and developers to protect certain areas of land for community needs by developing conservation easements and protection measures in the initial phases of the project. These measures can establish value for natural spaces and empower residents to approve and manage changes that may be made to the land in the future. These efforts should include the needs of the specific community related to the project but examples of land management efforts that have been facilitated through developer, conservation groups, and resident collaboration are listed below.⁵⁰

- 1. Parks: Dedicating land for park usage can be done during a project's planning phase through

⁵⁰ *Conservation-Based Affordable Housing*. The Conservation Fund, June 2006, www.conservationfund.org/images/resources/Conservation-Based-Affordable-Housing-Study-all-9-06-lo-res.pdf

collaboration with parks departments, and can increase the project's scope of public impact.

2. Sewage Treatment: Plots with wetlands can be effectively managed to facilitate energy reduction and protected as an ecological habitat. Incorporating them into the sewage treatment system at the tertiary level can improve the quality of wastewater as it is reused.
3. Open Space: Through native and adaptive species identification land trusts can establish protection buffers that screen the house lots from the roads. This can improve residential acoustic comfort and increase pollinator activity.
4. Cultural Spaces: Land trusts can also work with community members and potential residents to establish natural spaces to protect aspects of culture such as burial grounds or other historical spaces.

B. Environmental Design

Once the land management and program plan has been created, the land trust can begin to guide the environmental design process and finalize the site plan specific to the project. It is important that this process seeks to address lower income areas affected by environmental inequalities.

Additionally, the land trust can ensure the eco-dwelling design includes elements of green building, environmentally friendly and locally sourced materials, and landscape design inspired by habitat integration. The latter could include vegetable, medicinal, meditation, and heritage gardens, sculptural fitness stations and natural playscapes, and accessibility to bicycle and walking and trails.

During the development of The Kingston Land Trust's '*Land For Homes*' initiative, graduate students from Columbia University's School of Architecture, Planning and Preservation were engaged to create and propose eco-dwelling community designs inspired by environmentalism and green building. Their designs focused on public spaces and areas for land stewardship activities, and included the exclusive use of natural materials (ie. wood framing, wood shingles, hemp insulation, etc.) to build carbon negative buildings. This type of partnership is very fruitful for a housing organization or land trust, as the designers are able to engage the community for design creation, visioning, and feedback.

C. Green Building: Standards, Design Elements, GHG Accounting, and Peer Models

1. Green Building Standards

We looked at 4 signature green building standards to get a better understanding of what were some common themes and critical green design considerations across all of the standards. Most of the standards looked at some combination of 7 key areas: including site selection/land use, water, energy, air quality, building materials and waste, and the human element in the form of equity, access, and community building. There's also attention put toward some intangibles like beauty, innovation, and inspiration. See chart below.

- a. **Living Buildings**: Living Buildings adhere to some of the most stringent standards with 20 "imperatives" or requirements. The buildings are either autonomous and not reliant upon the electrical grid or other utility systems to operate or in accordance with the concept of net-zero - meaning they take in resources (from the electrical grid, public water supply, etc.) at levels equal to or less than what they return to the community and the environment (in the form of renewable energy, carbon emissions reductions, and waste diversion). Living Buildings were born out of the LEED building standard, as a stretch goal - moving from the idea of "doing less bad" toward fostering a more

regenerative relationship between buildings, the land, and people.⁵¹

- b. **LEED:** LEED (Leadership in Energy and Environmental Design) is the most widely used green building rating system in the world. Available for virtually all building types, LEED provides a framework for healthy, highly efficient, and cost-saving green buildings. It is a holistic building standard and more easily attainable. The governing body - the US Green Building Council, is now introducing LEED Zero certifications to provide the framework to push project teams even further.⁵²
- c. **Passive House:** Passive house is a voluntary standard for energy efficiency in a building, which reduces the building's ecological footprint. It results in ultra-low energy buildings that require little energy for space heating or cooling. Passive homes need to be air-tight, have continuous insulation, triple-paned windows, and a great system for controlling air quality. The passive house standard is almost singularly focused on energy efficiency.⁵³
- d. **WELL:** The WELL Building Standard is a performance-based system for measuring, certifying, and monitoring features of the built environment that impact human health and wellbeing, through ten core areas – air, water, nourishment, light, fitness, comfort, and mind, sound, materials, and community.⁵⁴

Land stewardship organizations can, in close collaboration with stakeholders, identify the most impactful areas addressed by green building standards (e.g. land use, energy, social) and use a patchwork approach to incorporate critical design elements in a more cost efficient and targeted manner.

2. Greenhouse Gas Emissions, Planetary Boundaries, and the Circular Economy

In addition to conventional green building standards, there are other useful ways to calibrate environmental, social, and economic impact of housing development projects. We focused on greenhouse gas accounting, planetary boundaries, and the circular economy as they relate to land use, water, energy, air quality, and materials in the built environment.

- a. **Greenhouse Gas (GHG) Emissions + Accounting:** Greenhouse gas accounting quantifies the amount of greenhouse gases (carbon dioxide, methane, nitrous oxide, ozone, chlorofluorocarbons, and hydrochlorofluorocarbons) emitted or removed from the atmosphere over the lifetime of a project.⁵⁵
- b. **Planetary Boundaries:** In addition to greenhouse gas emissions' impact on global warming, scientists have identified nine processes that the earth uses to regulate for stability and resilience. These processes have been quantified and translated into

⁵¹ "Living Building Basics." *International Living Future Institute*, 9 Sept. 2020, living-future.org/lbc-3_1/basics/#overview.

⁵² "What Is LEED?" *U.S. Green Building Council*, 2021, www.usgbc.org/help/what-leed.

⁵³ "About PHIUS." *Mission & History: Passive House Alliance U.S.*, 2021, www.phius.org/about/mission-history.

⁵⁴ The International WELL Building Institute (IWBI). "The WELL Building Standard™ Version 2." v2.Wellcertified.com, 2021, v2.wellcertified.com/wellv2/en/overview.

⁵⁵ "Greenhouse Gas Accounting." *ScienceDirect Topics*, 2021, www.sciencedirect.com/topics/earth-and-planetary-sciences/greenhouse-gas-accounting.

boundaries that set limits to ensure humanity can exist in equilibrium on the planet for generations to come.⁵⁶

- c. **7 Pillars of the Circular Economy:** Housing developments exist within a larger societal and economic context. The relationships that the residents have with the land and the other systems around them can be optimized for circularity - “designing out waste and pollution, keeping products and materials in use, and regenerating natural systems.”⁵⁷

Land stewardship organizations can use greenhouse gas accounting tools to set, track, and report Net Zero Carbon goals. Circular economy principles can be used to ensure that the construction, occupancy, and management of affordable housing developments are holistically incorporated into societal and economic systems, positively contributing to restorative and regenerative relationships.

3. Green Design Elements

We aggregated the most essential green design elements that were represented across the green building standards, to understand more simply how much they would cost, how feasible they were (from a design/build/operations/maintenance perspective), and what return you might see on that investment. See chart below, summary here:

- a. Living Buildings can have steeper upfront costs and be challenging to design and build, but have a really high return on investment, particularly over time
- b. Passive houses cost only about 5-10% more than a conventional building, and will also yield quite a large return, particularly as it relates to energy savings
- c. Site selection + land use are critically important, as they have huge implications on the potential carbon emissions from transportation for residents and staff, and also the potentially immeasurable impact on providing access to nature for respite, recreation, and land stewardship
- d. One of the simplest pieces and easy wins is the “passive” design and orientation of a building that supports shading in the summer and heating in the winter
- e. The last three elements are some of the most challenging, yet beneficial, green design elements that include: on-site renewable energy generation in the form of solar PVs, water catchment and wastewater management, and the reduction of exposure to harmful chemicals in building materials and their lifecycle impact. Each presents with its own unique set of challenges, in terms of cost, feasibility, and return on investment.

⁵⁶ “Planetary Boundaries.” *Stockholm Resilience Centre*, 2021, www.stockholmresilience.org/research/planetary-boundaries.html.

⁵⁷ “What Is the Circular Economy?” *Ellen MacArthur Foundation*, 2021, www.ellenmacarthurfoundation.org/circular-economy/what-is-the-circular-economy.

Chart: Green Design Elements

| | Impact | Cost (low, medium, high) | Feasibility (simple, moderate, challenging) | Return on Investment (low, medium, high) |
|-------------------------------------|--|---|--|---|
| Living Buildings | Regenerative impact on supply chains; land, energy, and water systems; and health of inhabitants | Medium to high | Challenging | High |
| Passive House | Increased thermal comfort, ultra-low energy use | Low (+5-10 %) | Moderate | High |
| Site Selection | Access to nature, place, transit, work - builds equity, accessibility, and quality of life | Variable | Moderate | High |
| Land use | Habitat restoration, land protection, localized food production | Low | Moderate | High |
| Proper orientation + shading | Sun heats in winter, shade provided in summer | Low | Simple | High |
| Solar PVs (Photovoltaics) | Reduced dependency on electric grid, reduced carbon footprint | High | Moderate | High |
| Net Positive Water | Stormwater/wastewater mngmt, roof rainwater collection, potable water production = restore natural hydrology of the land | High | Challenging (can be restri | Low |

| | | | | |
|------------------|--|-----|--|---------------|
| | | | cted by health, land, or building codes) | |
| Materials | Life-cycle impact (embodied carbon), reduced exposure to harmful chemicals | Low | Challenging | Low to medium |

Color coding in the chart:

Green is low cost, simple (in terms of feasibility), and a high return on investment. Red is high cost, challenging (in terms of feasibility), and a low return on investment. Yellow is somewhere in between.

4. Peer Models for Benchmarking

Here are examples of projects and partners that are putting into practice green building standards and green design elements that might resonate with a land stewardship organization's affordable housing "ecotone" aspirations:

- a. **BLOCK Project** (Seattle, WA)⁵⁸: established to tackle homelessness - building tiny houses in the backyards of Seattle residents. They are small, but fully-functioning units, and will have Living Building certification.
 - i. 10-20 125ft² Detached Accessory Dwelling Units (DADU) in backyards
 - ii. Fully functioning units: kitchenette, bathroom, sleeping, storage, porch
 - iii. Living Building Challenge: Energy Petal to full "Living" certification
- b. **Lopez Island Community Land Trust** (Lopez Island, WA)⁵⁹: founded in 1989 to meet the challenge of rising housing costs on the island. They've focused on Net Zero Energy and a community build construction model.
 - i. Provided 2 college student internships, 35 volunteer opportunities, 2 summer youth programs, 1 public school program, and gainful income for more than 25 local tradespeople.
- c. **Eco-Sense** (Victoria, British Columbia)⁶⁰
 - i. A private home that functions as a part of the ecosystem
 - ii. Blurs the line that separates where the dwelling ends and where nature begins
 - iii. Uses clay, sod, etc. for housing exterior
- d. **Tyson Living Learning Center** (Eureka, MO)⁶¹
 - i. Transformed from a degraded asphalt parking lot to a native landscaped garden replete with pervious concrete, local stone pavers, and a central rain garden
- e. **Ecocor High Performance Buildings** (Searsmont, ME)⁶²
 - i. North America's first manufacturer of Prefab Passive Houses: low-carbon, net zero-ready homes
- f. **Center for BioRegional Living** (Ellenville, NY)⁶³
 - i. Focus on using local, natural, on-site materials, local lumber mills and builders to construct straw-bale, cob, and clay structures, pole barns, and tiny houses

D. Role of Housing Organization

Through interviews conducted in the local community along with research, it was identified that housing organizations play a critical role in multiple stages of the design process. This includes connecting with future residents, to ensure that potential residents are included in the final outcome by engaging them early on in the planning stage.

⁵⁸ *The BLOCK Project*. 2021, www.the-block-project.org/.

⁵⁹ "Affordable Housing." *Lopez Community Land Trust*, 2020, www.lopezclt.org/affordable-housing/.

⁶⁰ "Eco-Sense Residence Victoria." *International Living Future Institute*, 8 Dec. 2016, living-future.org/lbc/case-studies/eco-sense-residence-victoria/.

⁶¹ "Living Learning Center." *Tyson Research Center*, 2021, tyson.wustl.edu/living-learning-center.

⁶² "About Us." *Ecocor Pre-Fab Passive Houses*, 3 Dec. 2020, ecocor.us/about-us/#who

⁶³ "Natural Building." *Center for BioRegional Living*, 2021, www.permaculturenewyork.com/natural-building.

For the Kingston community, it was identified that the housing organization Family of Woodstock, which offers affordable housing, shelters, and enrichment programs, could play a key role in this connection with future residents, both in terms of facilitating surveys and providing invaluable insight. Family of Woodstock provides many invaluable services to the Kingston community that could be incorporated in partnership with The Kingston Land Trust's *Land For Homes* initiative, including temporary and permanent housing, child care, family support, mental health services, school services for children, and employment.⁶⁴ Just as The Kingston Land Trust identified this organization as a local community resource with invaluable expertise and resources, it would be beneficial for any land trust or organization seeking to support affordable housing efforts to seek out a housing organization as a partner who can bring this experience.

By following this approach, this can help ensure that residents' needs will be met, and that the landscape design and any land stewardship offerings align with what will be most beneficial to residents.

VIII. Construction

A land trust can help steer a more strategic and integrated design and construction process, ensuring environmentally sensitive design, reduction in the carbon footprint of a project, and responsible use of materials. Combining conservation development with biophilic design can foster the protection of high quality conservation land and a deeper connection with the natural world. A land stewardship organization can play a fundamental role in ensuring that the construction contractor is included early on in the design-build process. They can help write in a construction contract requirement that stipulates the general contractor will hold a workshop with the trade contractors about the goals and guidelines of the project, addressing responsible materials sourcing, toxicity, waste, labor, and training opportunities.

A. Responsible Materials

1. Land stewardship organizations can help guide the way building materials are sourced and disposed of by ensuring sustainable extraction methods, manufacturing transparency, supporting the local economy, and increasing construction waste diversion from landfills.
2. Responsible materials sourcing guidelines have been set by the International Living Future Institute and can be used as a baseline to ensure that housing projects positively impact the building products market and the local ecosystem:
 - a. Identify an existing structure for adaptive reuse (i.e. taking an old building or site, and reusing it for a purpose other than it was designed)
 - b. Choose salvaged or reclaimed materials for construction and furnishings
 - c. Source 50% or more of wood products from Forest Stewardship Council certified sources, salvaged, or harvested on site
 - d. Source 20% or more of the materials construction budget from within 500km of the construction site; source 30% from within 1,000km
 - e. Source certified dimensional stone product under the Natural Stone Council 373 Standard by quarries and/or manufacturers
 - f. Create a Materials Conservation Management Plan: the project must divert 80% of the construction waste material from landfills.⁶⁵

⁶⁴ "Services." *Family of Woodstock*, www.familyofwoodstockinc.org/services/.

⁶⁵ Puri, Susan, and Kathleen Smith. "Living Building Challenge Framework for Affordable Housing." *International Living Future Institute*, 6 Mar. 2021, living-future.org/affordable-housing/.

3. Affordable housing developments have a long history of using substandard building materials that negatively impact occupant health. There are still a number of common building materials that have been linked to the asthma epidemic in poor and minority populations across the country.⁶⁶
 - a. The top five materials to address when looking to reduce harm from toxins are:
 - i. Insulation
 - ii. Flooring
 - iii. Carpet
 - iv. Paint
 - v. Gypsum Board Assemblies (drywall)
 - b. To increase the use of non-toxic, ecologically restorative, and transparent materials in buildings, housing and land organizations can help identify third party verified products through non-toxic materials databases:
 - i. International Living Future Institute's Declare⁶⁷
 - ii. Cradle to Cradle's Certified Product Standard⁶⁸
 - iii. Healthy Building Network's Pharos⁶⁹
 - iv. Mindful Materials⁷⁰

4. Land stewardship organizations are well positioned to support the sourcing and disposal of conventional building materials or provide recommendations for alternative locally-sourced natural building materials (e.g. cross-laminated timber, ashcrete, hempcrete, grasscrete, timbercrete, ferrock, bamboo, straw-bales, rammed earth, and recycled plastic).⁷¹

C. Labor + Green Job Training

Land stewardship organizations can support a community-based approach to building affordable housing and advocate on behalf of local labor. In addition to offering standard employment opportunities, construction labor roles can be filled by partnering with:

1. Community Colleges: community colleges can provide affordable education and training to local students and build a skilled green workforce that can serve in the construction of affordable housing construction, in the form of internships.⁷²
2. Building and Volunteer Organizations (e.g. Ulster YouthBuild, Habitat for Humanity, and AmeriCorps): youth and volunteers perform community service by providing labor, building skills, and giving back to their communities.

⁶⁶ "Know Better." *Healthy Building Network*, 2021, healthybuilding.net/.

⁶⁷ "Declare 2.0." *International Living Future Institute*, 18 Mar. 2021, living-future.org/declare/declare-about/.

⁶⁸ *Material Health Certificate - Cradle to Cradle Products Innovation Institute*. 2021, www.c2ccertified.org/material-health-certificate.

⁶⁹ *Pharos*. 2021, pharosproject.net/.

⁷⁰ *Mindful MATERIALS*. 2021, www.mindfulmaterials.com/.

⁷¹ Peckenham, Emily. "11 Green Building Materials That Are Way Better than Concrete." *Inhabitat Green Design Innovation Architecture Green Building*, 2 Aug. 2016, inhabitat.com/11-green-building-materials-that-are-way-better-than-concrete/.

⁷² Neal, Michael, and Laurie Goodman. "Labor Conditions Are a Big Factor in Our Current Housing Supply Challenges." *Urban Institute*, 22 Jan. 2020, www.urban.org/urban-wire/labor-conditions-are-big-factor-our-current-housing-supply-challenges.

3. Future Residents: providing sweat equity, future residents work alongside each other to build affordable housing, a concept of “partnership housing”, first made famous by Millard and Linda Fuller, founders of Habitat for Humanity.⁷³
4. Green Jobs Training Programs: interns are exposed to hands-on training (solar panel installation, weatherization, energy efficiency maintenance, installation, and audits), earn micro-credentials at local colleges, build relationships with local contractors, and potentially transition to on-the-job training (e.g. Citizens for Local Power in Kingston, NY)⁷⁴
5. Local Design-Build Construction Firms: local laborers and construction firms can be used to build conservation-based affordable housing for their communities, with special attention paid to sustainability, energy efficiency, and land stewardship.
6. Other Nonprofit Organizations: a land stewardship organization can help broker partnerships between affordable housing organizations and other local nonprofit organizations to bridge the skill-building needs of community members and skill-building opportunities presented by affordable housing development.

D. Housing Organization’s Role: Construction Management

Affordable housing organizations usually oversee the construction phase of the project. As owners and primary project managers for the development, housing organizations can help ensure the project stays on time, on budget, and per the specifications outlined during the design phase. Employing an integrated design-bid-build process ensures that by the time construction happens the whole project team is engaged in a more holistic and inclusionary approach to development. Affordable housing organizations can partner with land stewardship organizations to support responsible materials sourcing, toxicity reduction, waste diversion, and skill building endeavors.

IX. Occupancy & Management

A. Land Stewardship: Cultivation and Programming

With their network of collaborators and organizational expertise in land conservation, ecological principles, and community engagement, land trusts can help affordable housing developers manage the developed site or help to develop a land stewardship plan for the residents targeted to the needs of their community for the property managers to implement upon occupancy. While traditional land management is typically led by decisions primarily driven by the site owner, land stewardship involves dialogue, collaboration and proactive stakeholder engagement, to be defined by specific planning considering the complexity of the site and what end goals the community expects⁷⁵. Based on these community expectations, land stewardship activities could include programming, ecosystem augmentation, job training models, and impact measurement.

Residential onboarding and training programming would teach residents how to care for the land and how the land can care for them in ways involving but not limited to gardens, fitness, playscapes, bikes and trails, and habitat integration. Ecosystem services include biomass production, production of

⁷³ “Habitat's History.” *Habitat for Humanity*, 2021, www.habitat.org/about/history.

⁷⁴ “Green Jobs.” *Empower Kingston*, 2021, www.empowerkingston.org/greenjobs.

⁷⁵ *LAND STEWARDSHIP Investing in The Natural, Social and Economic Capital of Industrial Land*. (Network for Industrially Co-Ordinated Sustainable Land Management in Europe), nicole.org/uploadedfiles/NICOLE_CF_Landstewardship_A5_Booklet_digital.pdf.

oxygen, soil formation and retention, nutrient cycling, water cycling, and provisioning of habitat.⁷⁶ Eco Dwelling projects can include land stewardship planning that augments these services for long term sustainability. Ecosystem services can be augmented by residents through risk mitigation, regulation, support, and culture. Humans can most effectively impact the natural system through maintenance and the cultural integration of harvest patterns.⁷⁷ By exploring the ecosystem services in the community and helping residents to develop augmentation skills, Land trusts can help build a culture of sustainable living and help residents build skills that may lead to employment, further closing the gap of inequality within the community.

Job Training models should ensure job-training services can actually help secure jobs for tenants, so it may be helpful to collaborate with employment services with established community organizations to develop a recruitment pipeline with preparation efforts that are able to adapt to changing market needs of a sustainable economy. Additionally, it will be imperative to the long term sustainability of the project and the eco-dwelling community that metrics of success are developed to be measured and tracked as residents engage with the space. Green Bond Principles are the most utilized impact metrics for green buildings specifically covering Energy Performance, Carbon Performance, Water Efficiency and Savings, Waste Management, and Certification Standards.⁷⁸ Additionally, the US Green Building Council reports that land and housing developments have Impacts on on Communities, Supply Chains, and Society (Social Impacts) mostly through materials.⁷⁹ This report emphasizes that when evaluating the true sustainability of the product, the effects that materials and products have on communities must be taken into consideration.

B. Role of Housing Organization

It is recommended that the housing organization follow a 'Housing First' approach, as modelled by The Homeless Hub.⁸⁰ This approach aims to end homelessness by centering on moving people experiencing homelessness into independent and permanent housing as a critical first step.

This approach consists of three kinds of supports:

1. **Housing Supports:** to help residents obtain and maintain their housing, in a way that takes into account their preferences and needs, and addresses housing suitability. Key housing supports include finding appropriate housing, supporting relations with landlords, applying for and managing rent subsidies, and assistance in setting up eco-dwelling units.
2. **Clinical Supports:** to help enhance the health, mental health, and social care of the residents. Housing First teams often speak of a recovery-oriented approach to clinical supports designed to enhance well-being, mitigate the effects of mental health and addictions challenges, improve quality of life and foster self-sufficiency.
3. **Complementary Supports:** to help residents improve their quality of life, integrate into the community, and potentially achieve self-sufficiency. The supports may include life skills,

⁷⁶ *Glossary: Ecosystem Services*, www.greenfacts.org/glossary/def/ecosystem-services.htm.

⁷⁷ Funabashi, Masatoshi. "Human Augmentation of Ecosystems: Objectives for Food Production and Science by 2045." *Nature News*, Nature Publishing Group, 21 Sept. 2018, www.nature.com/articles/s41538-018-0026-4.

⁷⁸ *Suggested Impact Reporting Metrics for Green Building Projects*. International Capital Market Association, Mar. 2019, www.icmagroup.org/assets/documents/Regulatory/Green-Bonds/Resource-Centre/Final-Green-Buildings-Reporting-Metrics-March-2019-including-Reporting-Templates-200319.pdf.

⁷⁹ Hetrick, — by Kathleen. "The Social Impacts of Green (and Not-So-Green) Materials." *USGBC LA*, 3 Dec. 2019, usgbc-la.org/spotlight-on-sustainability/the-social-impacts-of-green-and-not-so-green-materials/.

⁸⁰ "Housing First." *Housing First | The Homeless Hub*, www.homelesshub.ca/solutions/housing-accommodation-and-supports/housing-first.

engagement in meaningful activities, income support, assistance with employment, training and education, and community and social engagement.

This approach also consists of two different employee teams:

1. Assertive Community Treatment (ACT) Teams: designed to provide comprehensive community-based support for residents with challenging mental health and addiction issues, and may support individuals in accessing psychiatric treatment and rehabilitation. This team may include physicians and other health care providers, social workers and peer support workers.
2. Intensive Case Management (ICM) Teams: designed to support individuals with less acute mental health and addiction issues through an individualized case management approach. The goal of case management is to help residents maintain their housing and achieve an optimum quality of life through developing plans, enhancing life skills, addressing health and mental health needs.

However, it is important to note that it is not a one-size-fits-all solution, and that the internal model chosen should be adapted to the team itself and the final development of the project scope, direction, and services offered.

X. Risks

The most significant risks to consider when developing an affordable eco-dwelling project relate to the acquisition of land and materials, finances, and the development process.⁸¹ Who is paying for the project and where it will be sited are factors that impact each stage of the project. Depending on funders, long term maintenance and operations risks should be taken into account. The integrated design approach described in this Roadmap seeks to treat these risks by practically being aware of them and planning for their impact early on.

A. Risk Categories Identified by Enterprise Community Partners (formerly The Enterprise Foundation)

1. Acquisition
2. Financial Management
3. Team Selection
4. Project Design and Construction Specifications
5. Production Management
6. Performance Guarantees
7. Change Orders
8. Operations and Maintenance
9. Process Timeline

B. Other Risks

1. Depending on funders, long term maintenance and operations can also pose significant risks.

C. Areas Identified by Lincoln Institute That Can Contribute to Setbacks or Even Failure⁸²

1. Limitations in staff resources and skills
2. If there's differentiation or conflicts in mission

⁸¹ *Risks in Affordable Housing Development: Important Factors to Watch* . The Enterprise Foundation, 2000, www.csh.org/wp-content/uploads/2012/07/EnterpriseRiskspdf.pdf.

⁸² "Risks in Affordable Housing Development: Important Factors to Watch." The Enterprise Foundation, Inc. , 2000, www.csh.org/wp-content/uploads/2012/07/EnterpriseRiskspdf.pdf.

3. Financial arrangements
4. The ability to receive donations of land
5. Relative strength or weakness of the local housing market and land.

In addition, the Lincoln Institute also acknowledges that there is no universal approach nor universal reason for failing in affordable housing initiatives. Each community and location is unique, so while all of these risks are important to consider, the areas most pertinent and challenging for each location will vary.

XI. Conclusion

Historically, members of land conservation and affordable housing organizations have had competing land use needs. This Roadmap has been created with the intention of addressing and integrating these uses to enhance the quality of life in communities. Strengthening the relationship between land trusts and housing organizations can provide care for the land, ecosystems, and residents through the development of eco-dwelling projects.

Included in this Roadmap are multiple case studies of successful conservation-based affordable housing projects as well as benefits of collaboration through creative partnerships. The Kingston Land Trust's 'Land For Homes' initiative experience and study of aligned projects have provided the following takeaways:

- It is possible to successfully create communities of affordable eco-dwellings while preserving the land on which they are built.
- Partnerships among diverse parties allow for skills-sharing and reduce the risk for any single organization. This includes partnerships between land trusts, housing organizations, local governments, private developers, other nonprofit groups, and multiple stakeholders.
- New sources of funding may be accessible from the collaboration between housing organizations and land trusts.
- Eco dwelling projects should ensure the strategic protection and conservation of the land, and the site plan of the project should be created in a way that least disturbs the habitat, and additionally enriches the habitat
- The location of the eco-dwellings site should have easy access to places of work, services, and transit.

Increasingly, sustainable and resilient strategies are being recognized through the integration of the built environment and nature. A successful eco-dwelling project would provide the community with adequate and affordable housing, environmental connection, and a strong sense of place derived from local natural and cultural resources. It would also incorporate the needs and voices of the community effectively and thoughtfully, by ensuring there is community engagement, involvement, and opportunities for collaboration throughout the process of design, implementation, and management, even ownership. As such, this Roadmap was designed to provide a holistic approach to affordable housing development that integrates social, economic, and environmental objectives.