

REACH: Relocation for Equitable and Adaptive Climate Housing

REACH Roxbury is a 400-unit mixed income development that **addresses the intertwined crises of rising coastal climate risk for vulnerable communities, and the inequitable outcomes that they face when forced to relocate.** This development, located in Boston’s historic Roxbury Neighborhood, provides 200 units of affordable housing, increased climate resilience, and high quality green space and public amenities for existing residents while creating a new home and community for those displaced by coastal climate hazards.

The unique innovation of REACH is a framework for voluntary proactive climate migration. 100 units will house residents from coastal communities in Massachusetts who took federal buyouts to relocate and transfer the equity of their flood-prone home into ownership in the REACH cooperative. Climate relocation has been tried before, but without supports in their new homes, vulnerable residents face inequitable outcomes. REACH changes the narrative and provides low- and moderate-income home owners with a pathway towards higher ground and increased wealth.

Development Strategy

Utilizing a newly proposed equity transfer mechanism, **REACH leverages federal buyouts in high risk coastal communities to provide significant up-front capital that fundamentally changes the math on social impact development,** making it cheaper and easier to provide community benefits while addressing climate risks.

By aligning social impact investing with key focus issues for the City of Boston and Massachusetts, climate resilience and housing affordability, REACH benefits from significant municipal and state support and redefines the scale of impact for developers focused on positive social outcomes.

Risks and Assumed Financing Costs

The capital stack carries a weighted cost of approximately 4.8% across ten sources. Senior permanent debt is priced at 4.5% on tax-exempt bonds over 30 years; cooperative community investment notes at 2.5% over 15 years; MassHousing soft debt at 0–2% over 40 years. LIHTC equity is priced at \$0.85 per credit under current 4% market conditions. Construction financing assumes 7.5% on an 18-month draw schedule.

Three risks concentrate exposure. CRC federal authorization does not yet exist; Phase 1 proceeds on established LIHTC and conventional financing without CRC dependency. A 10% construction cost escalation on \$153.4M in hard costs compresses equity IRR from 20.3% to 9.7%; fixed-price modular CLT contracts and a 7% contingency (\$11.7M) contain the exposure. Cooperative member recruitment requires 200 committed buyers at a 70% pre-commitment threshold before Phase 2 construction begins. Every major risk has a structural mitigant. None has a guarantee.

Project Impact

An estimated **3 million Massachusetts residents will be impacted by coastal climate hazards by the end of the century** and the state projects that **costs from coastal hazard damages will exceed one billion dollars annually by 2070.** These burdens are not felt equally, low-income and minority communities are threatened by the worst of climate hazards but lack the resources and capabilities to protect themselves or rebuild after disaster hits.

Federal and state programs have attempted to relocate at-risk communities through managed retreat but these projects generate inequitable outcomes and fail to establish community for those who move. **REACH Roxbury changes this narrative by taking a comprehensive approach to climate relocation and managed retreat that prioritizes equitable outcomes and community development for residents who leave their homes and the community they join.**



DEVELOPMENT SUMMARY		REACH Roxbury
400 units 5 acres Reed & Newcomb St, Roxbury MA \$202.4M TDC		
PROJECT OVERVIEW		
Total Development Cost		\$202.4M
Total Units		400
Cooperative (limited-equity)		200 (50%)
Market-Rate		120 (30%)
Affordable (60% AMI)		80 (20%)
Gross Square Footage		389,200 SF
Retail / Amenity SF		15,000 29,200 SF
Cost per Unit / GSF		\$506K \$520/SF
Construction		Modular Mass Timber (CLT)
Site / Density		5 acres 80 du/acre
PERMANENT CAPITAL STACK		
Cooperative Sale Proceeds		\$92.3M (45.6%)
Soft Sources (10 programs)		\$45.0M (22.2%)
Permanent Loan (tax-exempt bonds)		\$40.4M (20.0%)
LIHTC Equity (4% credits)		\$14.6M (7.2%)
Conventional Investor Equity		\$10.0M (4.9%)
TOTAL PERMANENT SOURCES		\$202.3M
Public Subsidy per Unit (face value)		\$149K
FINANCIAL RETURNS		
Levered IRR (Conv LP, before-tax)		20.2%
LIHTC Investor IRR (after-tax)		6.8%
Unlevered Project IRR		2.8%
Equity Multiple (15-yr exit)		6.15x
Year 1 NOI (stabilized, 200 DevCo units)		\$3.4M
Year 1 DSCR / Year 2 DSCR		1.36x 1.42x
Stabilized YOC (Year 2)		3.4%
Exit Cap Rate / Hold Period		5.25% 15 years
Breakeven Occupancy		82.5%
Coop DSCR (Year 1)		1.01x
AFFORDABILITY – MONTHLY CARRYING CHARGES (2BR)		
Market Equivalent Rent		\$3,200/mo
Roxbury Resident (equity-adjusted)		\$2,031/mo
Climate Migrant (equity-adjusted)		\$759/mo
<small>SF-weighted, power-curve equity model (p=0.4). Higher equity = lower charge.</small>		
CLIMATE / ENVIRONMENTAL VALUE (30-YEAR NPV)		
Total Environmental NPV		\$45.2M
<small>Avoided infrastructure, NFIP/FEMA losses, property value, carbon</small>		
Env NPV per \$1 public investment		\$0.48
<small>FEMA BCA + EPA SCC (\$190/tCO2e), 7% discount, 30-year horizon</small>		
SOCIAL RETURN ON INVESTMENT (30-YEAR)		
SROI (credibility-weighted)		3.1x per \$1 public
SROI floor (rent delta only)		1.8x per \$1 public
30-yr Rent Savings NPV (280 HH)		\$150M
Public Investment (denominator)		\$81.7M
WEALTH BUILDING (30-YEAR) & JOBS		
Roxbury Resident – Year 30 Equity		\$245K
Climate Migrant – Year 30 Equity		\$1.25M
30yr Housing Savings (Rox / Mig)		\$421K \$879K
Jobs: Permanent / Construction		45 800 person-years



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Look for these highlights throughout to understand how REACH connects across development, design, and implementation.

- Reaching People
- Principled Design
- Impacting Community
- Addressing Climate



Connected Crisis

Coastal Climate Hazards are Forcing Communities Across the US to Reckon with Their Futures, Investment in Roxbury Can Help Pave the Way

By 2070, coastal climate hazards are projected to cause one billion dollars in damages annually and threaten the homes of three million Massachusetts residents. With a current debt of twenty-two billion dollars, the National Flood Insurance Program is already strained and poorly equipped to handle the rising tide of climate crises.

The future of coastal resilience requires innovation; investment in Roxbury as a destination for climate relocation is the first step towards a new scalable model that mitigates risks before the worst can happen. Early intervention can help vulnerable residents reach higher ground and prevent Roxbury from facing climate gentrification as compounding crises place financial pressures on inland communities with lower real estate values.



Addressing Climate

Evidence from FEMA and the National Institute for Building Sciences has shown that for every \$1 invested in mitigation, \$6 are saved in future emergency disaster response costs. With increasing severity and frequency of climate hazard events, the math is quickly tipping in favor of proactive spending.

Vulnerable Communities Face the Greatest Threats from Climate Hazards and Relocation Often Results in Inequitable Outcomes

In 1999, following damage from Hurricane Floyd in North Carolina, FEMA buyouts relocated the entire town of Lincoln. But with federal checks and no destination community members were scattered and critical support systems eroded. Vulnerable communities stand to lose the most from managed retreat and even well intentioned programs can have detrimental effects. Addressing housing and community needs in safe urban centers is essential so

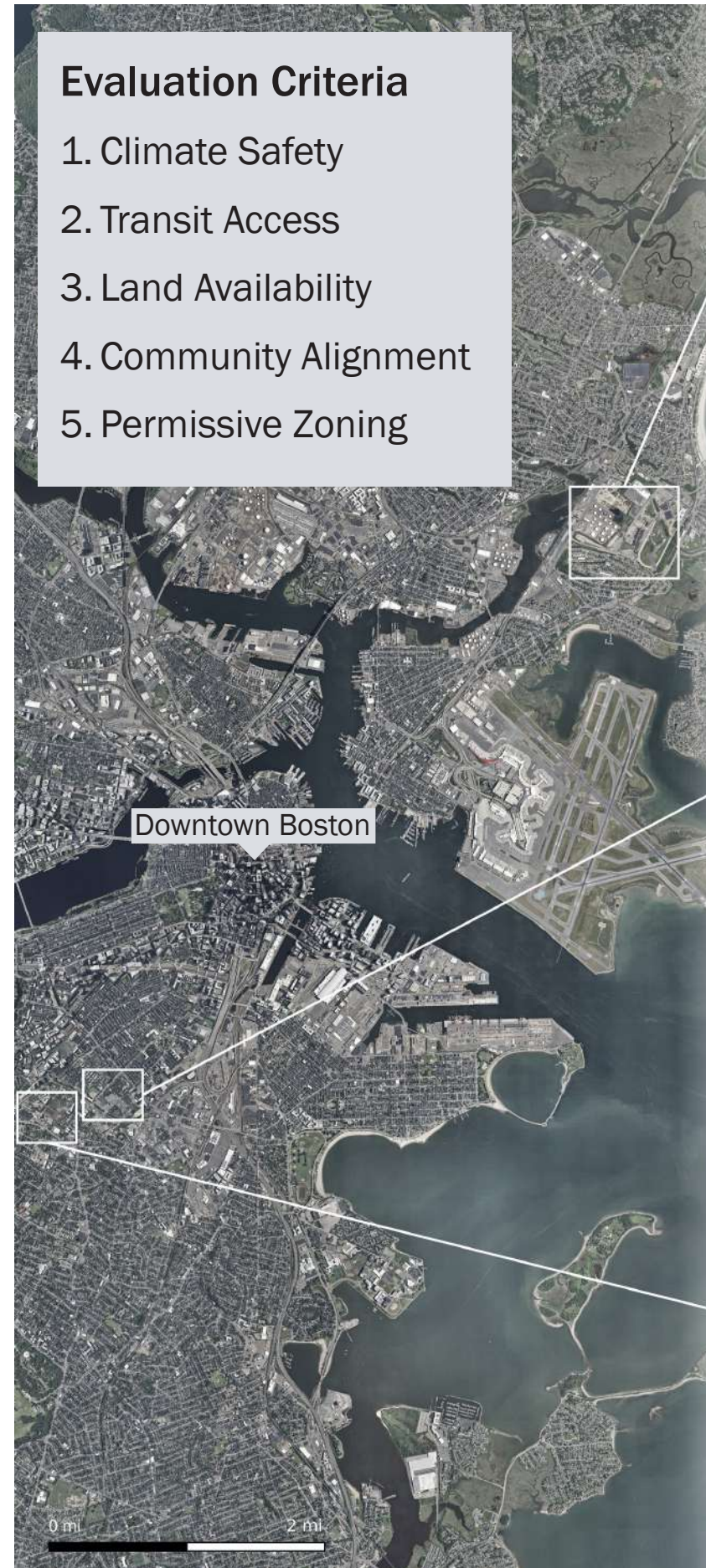
communities escaping climate threats have somewhere to settle.

Impacting Community

Greater Boston is short over 100,000 affordable units, and Roxbury faces the pressure of a growing, cost-burdened population. Climate migration in the coming decades will compound strain without strategic investment in housing.

Evaluation Criteria

1. Climate Safety
2. Transit Access
3. Land Availability
4. Community Alignment
5. Permissive Zoning



Suffolk Downs

East Boston, 525 McClellan Hwy

Climate Safety: Significant flooding by 2050

Transit Access: Subway ~5-10 minute walk, only direct service to downtown Boston

Land Availability: Developer owned land with public backlash against development and history of site contamination



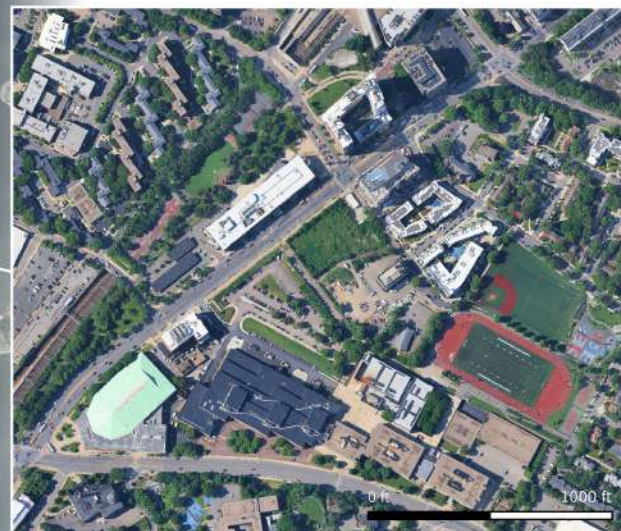
Boston W&SC

Roxbury, Reed St & Newcomb St

Climate Safety: Only minor flood risk by 2070

Transit Access: Subway and multiple bus lines within ~5-10 minute walk

Land Availability: City owned and currently underutilized as surface parking



Parcel P3

Roxbury, Washington St & Melna Cass Blvd

Climate Safety: Minimal risk

Transit Access: Subway and multiple bus lines within ~5-10 minute walk

Land Availability: Strict development requirements set "PLAN: Nubian Square" adopted by city and community in 2019.

Successful Managed Retreat is Not Just About Leaving, It's About Creating Adaptive Community Somewhere New

The receiving community determines whether relocation preserves or destroys household stability. Past attempts at federal climate retreat in Lincoln City, Oakwood Beach, and Isle de Jean Charles demonstrate that buyout programs without destination planning scatter residents across unfamiliar markets, sever social networks, and convert home equity into depreciating rental costs. REACH reverses the sequence: the receiving community is designed, financed, and constructed with at risk communities in mind. Site selection is itself climate mitigation.

Principled Design

The Boston W&SC site sits at the edge of Roxbury presenting an opportunity to solidify a community against gentrification while prioritizing climate resilience and relocating vulnerable residents from coastal communities.

The Boston W&SC Site in Northern Roxbury Balances Climate Resilience, Community Character, and Development Feasibility

Three candidate sites were evaluated across eight weighted criteria. Suffolk Downs (161 acres, East Boston) is well located for transit access but faces climate risks that would risk future displacement. Nubian Square Parcel P-3 scores well on size and transit but carries sixty years of serial development failure. Reed & Newcomb is the only site where the full program is feasible on a single publicly owned parcel, with a prior 402-unit approval on the same land demonstrating that density is already achievable.

Northern Roxbury is in a Hot-Spot of Development and Equitable Investment is a Top Priority for the City of Boston

Seven comparable developments within a two-mile radius establish the cost and demand baseline. Bartlett Station closed at \$630K/unit with \$37.8M in layered affordable sources. Melnea Cass delivered 76 units at \$513K/unit and \$322/SF construction. South Standard, the nearest new-construction lease-up, opened in April 2026 at \$3,613 for one-bedrooms, a 10.7% increase from initial listings one week prior. REACH's \$506K/unit and \$520/SF sit within this range while delivering Passive House performance and mass timber construction that no local comparable includes. The Boston Housing Authority waitlist exceeds 42,000 households seeking affordable rents, and 2024 deliveries were the lowest since 2016, constraining new supply against sustained absorption.



Comparable Developments — Roxbury & Greater Boston

Project	Units	Aff. %	AMI Tiers	TDC/Unit	\$/SF	Type / Stories	Year	Status
2505 Washington (Bartlett Stn)	60	100%	30-80%	\$630K	—	5-story, LEED	2022	Complete
100 Cabot (Flat 9 / The Amp)	316	Mixed	30-110%	\$918K	—	3-12 story, 3 phases	2020-25	Complete
40 Raynor (Melnea Cass Apts)	76	95%	PBV+60-100%	\$513K	\$322*	5-story, LEED Silver	2019	Complete
397 Dudley (Dudley Crossing)	47	100%	60-80%	~\$566K	—	5-story new+rehab	2024	Complete
Boston East (E. Boston)	200	13%	70% AMI	\$375K	—	Waterfront mid-rise	2018	Complete
Olmsted Green (Mattapan)	100	40%	30-60%	—	—	Low-rise townhouse	2020	Complete
South Standard (S. Boston)	214	Mixed	—	—	—	Mid-rise	2023	Leasing
REACH Roxbury	400	70%	Coop+60%+Mkt	\$506K	\$520	5-story CLT / Passive Hse	2027	Proposed

Sources: MassHousing, DHCD, HUD Choice Neighborhoods, BPDA, developer disclosures (2018-2025). *Contractor value only.

Demand Drivers & Supply Constraint

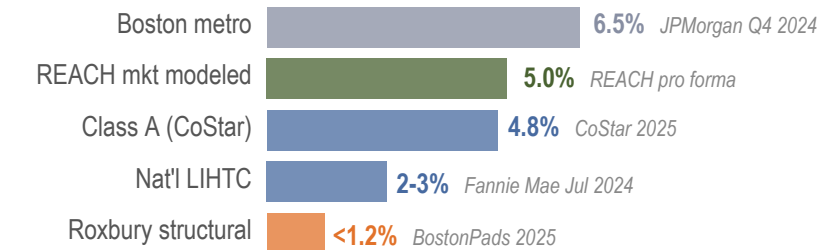
Longwood Medical Area	68,000 jobs, 15-min transit, +30% growth	MASCO 2024
Universities (30 min)	Northeastern, Harvard Med, BU, Wentworth	MBTA/Google Maps
BHA waitlist	42,000+ households across all income levels	Boston Housing Authority
2024 deliveries	Lowest since 2016 — constrained supply	CoStar 2025
Rent growth (10yr)	Boston avg 3.3%/yr; REACH models 3.0%	CoStar 2015-24
REACH price gap	15-31% below prime Boston new-build	RentCafe; Zumper



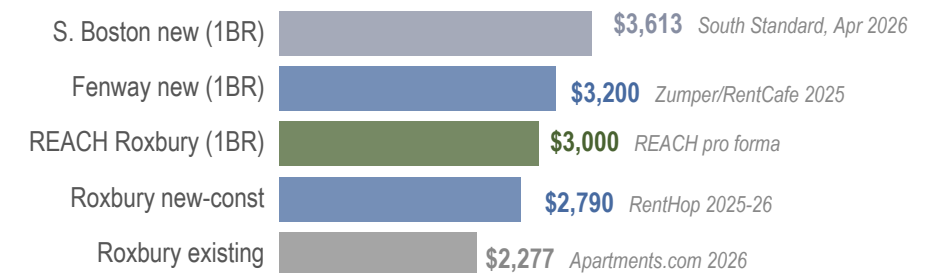
REACH Amenities Address Measured Gaps

- Population ~52,534 | Median age 33.6 | 76.5% renters | 54% income-restricted housing
- Community Health Clinic → HPSA/MUA designated (healthcare desert)
 - Workforce Development Center → 10.8% unemployment (2.4x city avg)
 - Community Kitchen & Food Hub → 25% food insecure (highest in Boston)
 - Climate Education Center → EJ population designated

Vacancy Rate Comparison



1Br Rent - Reach vs. Market



Tens of Thousands of Low- to Moderate-Income Homeowners Live in High Risk Coastal Areas and Would be Eligible for Relocation Through REACH

The city of Revere sits seven miles northeast of Roxbury and is emblematic of the looming crisis. 45.1% of the city sits below ten feet elevation, exposing it to constant flooding and high hurricane risk by 2050. 2,349 residential parcels with \$3.2B in assessed value fall within Revere's Special Flood Hazard Area, where median sale prices already trade at an 18.7% discount to properties outside the flood zone (\$545K vs. \$670K).

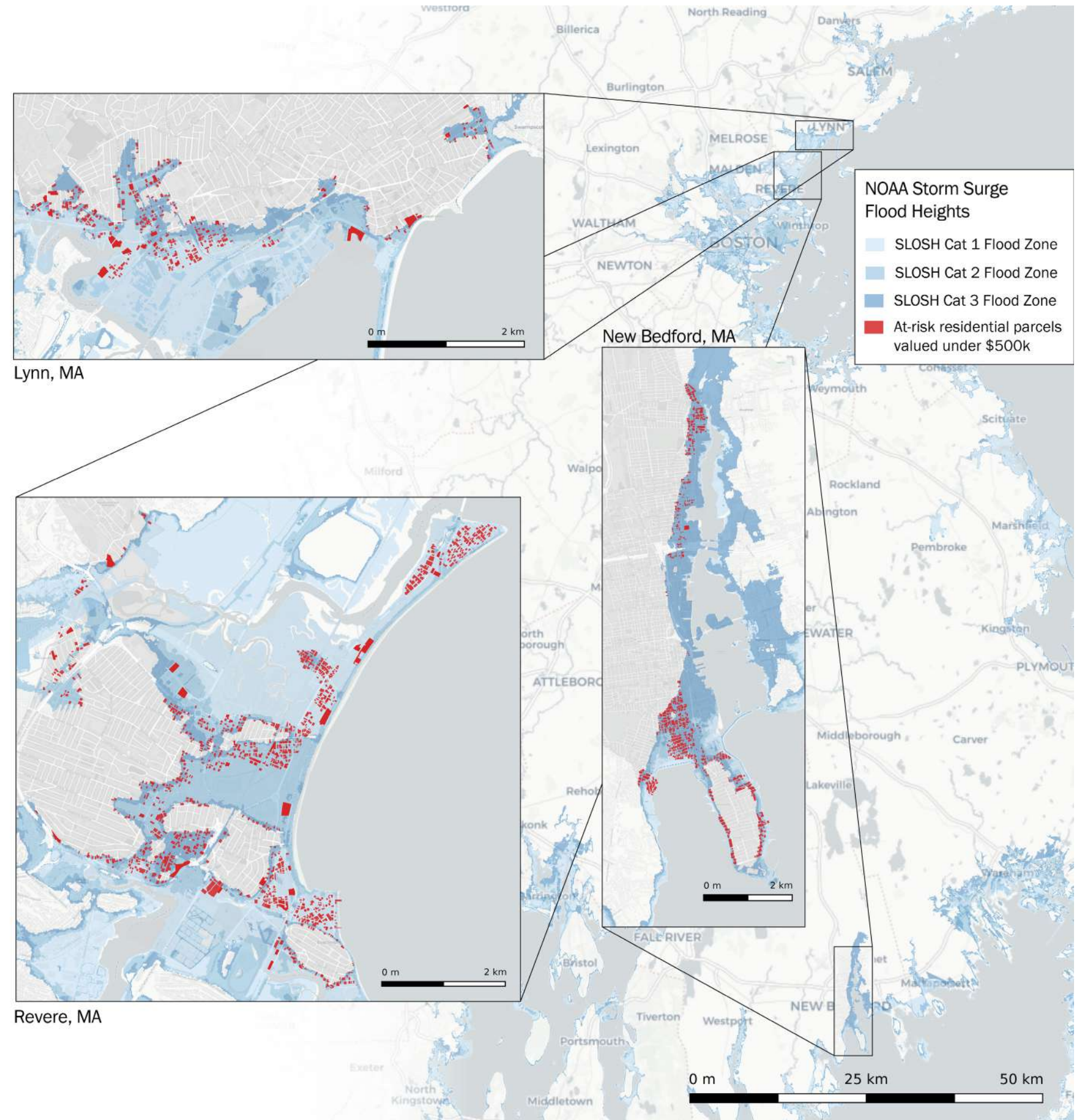
NFIP Risk Rating 2.0 is increasing premiums by thousands of dollars for high-risk coastal properties. Revere's most exposed neighborhoods (Oak Island at 94.3% below ten feet, Riverside at 90.4%, Point of Pines at 85.8%) are disproportionately immigrant and working-class. The financial pressure on these homeowners is mounting and their story is repeated in coastal communities across Massachusetts.

Addressing Climate

Massachusetts' ResilientCoasts Initiative (November 2025) and reconstituted CDBG mitigation funds create a policy environment where state and federal money are seeking projects like REACH.

Reaching People

Revere homeowners watching insurance costs double and property values erode are in a losing financial position. REACH offers an alternative that preserves equity rather than destroying it.



Current Policies and Mechanisms for Managed Retreat are Ineffective and Fail to Support Vulnerable Communities

Three structural failures define the current system. Existing programs cannot cross municipal boundaries: a Revere buyout cannot fund a Roxbury unit. They cannot operate in coordination: FEMA, state housing, and CDBG-MIT each run separate timelines with separate eligibility rules. And they operate at institutional scale rather than human scale: a homeowner receives a check and a deadline, not a destination. A Revere planner described the current buyout mechanism as “effectively impossible to use.”

Existing Policy Landscape

Five federal and state approaches to coastal hazards and why none enables coordinated climate retreat

FEMA HMGP *Post-disaster buyouts* **\$89K** avg national buyout

- Reactive: requires presidential disaster declaration to trigger
- Pays post-storm FMV, not pre-storm; households lose equity
- 5+ year avg timeline; 19.5 months to obligate funds (CRS IN11911)
- National avg buyout \$89K; coastal NE properties worth \$400K+

FEMA FMA / Swift Current *Pre-disaster mitigation* **\$1.1B** annual cycle (FY2024)

- Requires active NFIP policy; excludes uninsured homeowners
- Property-level only, not coordinated community relocation
- Repetitive-loss structures eligible but trapped in repair cycle
- \$600M FMA + \$500M Swift Current annual cycle (FY2024)

CDBG-DR/MIT *HUD disaster recovery* **330+** days to deploy

- Supplemental-dependent: requires congressional appropriation
- 330+ day cycle: action plan + HUD review + enviro clearance
- Allocations tied to qualifying disasters; many states have \$0
- Cannot fund cross-jurisdictional buyout + receiving-area build

NFIP *National Flood Insurance Program* **1.3%** of policies = 15-20% of claims

- Funds repair in place; incentivizes rebuilding in flood zones
- Avg claim covers fraction of home value; does not fund relocation
- 1.3% of policies generate 15-20% of claims (GAO-04-401T)
- Risk Rating 2.0: premiums rising toward actuarial, equity declining

State Resilience Planning *e.g. MA MVP / CZM* **\$0** direct buyout funding

- Planning frameworks, not capital sources; no direct buyout funding
- Legislative proposals filed but not yet enacted in most states
- No cross-municipal sending-to-receiving coordination mechanism
- No portable equity instrument or replacement housing pathway

Addressing Climate

Properties bought out in Revere don't disappear, they transition to municipal ownership and become natural flood buffers restoring coastal wetland habitat. Retreat becomes transformation.

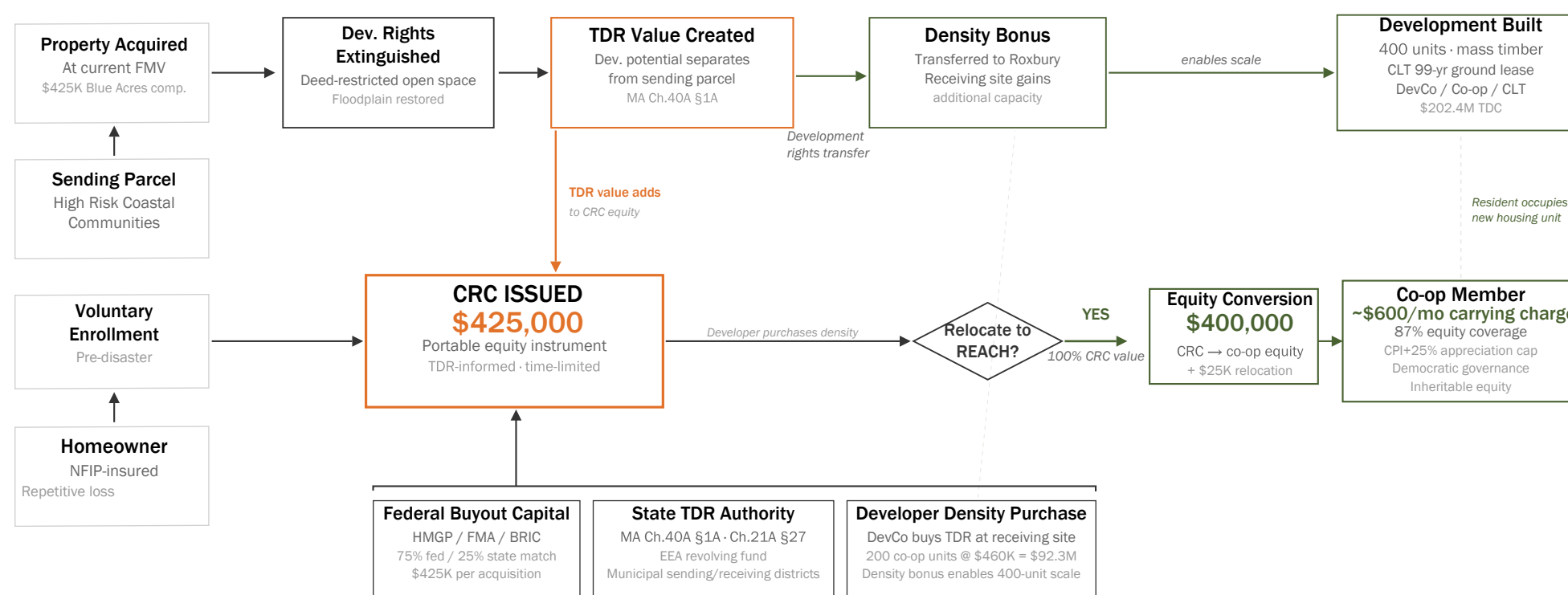
Principled Design

New Jersey's Blue Acres program has spent 30 years buying out flood-prone properties at a 2:1 cost-benefit ratio – proving managed retreat works financially. REACH adds the missing piece: a prepared receiving community.

Climate Relocation Credits Unlock Equity Threatened by Coastal Hazards and Give Residents a Pathway to Higher Ground

The CRC assembles five proven components into a new configuration. Federal buyout capital funds property acquisition. State TDR authority separates development value from the sending parcel. Cooperative equity formation provides the ownership structure. The CLT ground lease holds land in permanent trust. What is new is the portable equity instrument that connects them.

On a \$425,000 acquisition, 6% (\$25,500) goes directly to the homeowner for relocation and transition costs. The remaining 94% (\$399,500) flows into the cooperative's construction capital account, funding the development that the homeowner will occupy. The buyout proceeds build the building and give residents equity stake in their community.



Sources: FEMA HMA v2.1, OpenFEMA 1978-2024, HUD CDBG-MIT Mar 2025, L1-04/05/17

Climate Relocation Credits Align the Motivations of Residents, Government, and Developers

The CRC resolves a three-sided misalignment. Residents in flood zones face declining property values and rising insurance costs but have no way out. Municipal governments face parcels that cost more in climate prevention than they generate in tax revenue but have no tool to coordinate relocation. Developers in receiving areas face capital gaps for affordable and cooperative housing. The CRC connects all three: homeowner equity funds cooperative development, federal mitigation grants replace reactive disaster spending, and the receiving municipality gains tax-generating, climate-resilient assets.

Reaching People



Marco, 68

Marco has lived in revere his whole life, but repeated flooding has made him realize the time to leave is now. REACH lets him move close to his son in Boston and keep the equity he invested in his home 40 years ago.

For some residents, taking the CRC is a choice, for others, it's a lifeline. REACH empowers residents who want to make a change to do so confidently.

Climate Relocation Credits (CRC) Policy SWOT

STRENGTHS

Converts destruction into equity.
The CRC intercepts \$100B+ in annual federal disaster spending before it becomes wreckage, redirecting \$40M into community-controlled development. Traditional buyouts liquidate at 40-60 cents on the dollar; the CRC preserves full equity.

Proven components, new assembly.
Federal buyouts have operated for thirty years (Blue Acres). TDR markets function across dozens of municipalities. The CRC combines two established mechanisms into one portable instrument; policy risk is in the combination, not the components.

Structure aligns all parties.
Voluntary liquidation provides fair market value. Over ninety percent converts to cooperative equity upon relocation, ensuring committed members, not speculators. The split solves conventional buyout moral hazard.

Demand validates the \$400K assumption.
Sending-area home values bracket the price: New Bedford \$385K, Revere \$625K, Cape Cod \$450-750K. Boston metro gained 15,000 coastal households (2018-2023). The migration is underway; the CRC gives it financial structure.

OPPORTUNITIES

Massachusetts is building the infrastructure.
ResilientCoasts Initiative (November 2025) recommends both TDR and buyout programs. The state has identified the problem, named the mechanisms, and created the institutional framework. CRC operationalizes what the state already endorses.

Fiscal pressure accelerates authorization.
NFIP losses mount annually. Every dollar of pre-disaster mitigation saves six in emergency response. Congress faces escalating reactive spending or instruments that produce wealth alongside protection.

Sending-area demand is structural.
Three million Massachusetts residents face coastal hazard by century's end. FEMA Risk Rating 2.0 triggered 18% flood insurance increases. Massachusetts alone supports 10,000-15,000 units over a decade (\$3.8-5.8B).

The CRC creates a new asset class.
No existing instrument combines portable equity preservation with place-based community development. A successful pilot establishes the mechanism for replication across \$19.5B in national addressable market.

WEAKNESSES

Federal authorization does not yet exist.
Three pathways: HUD demonstration, FEMA PDM expansion, direct appropriation. None is certain. The pilot can proceed with state/philanthropic substitution, and TDRs at ~\$30K/unit from private markets, but these are backstops for a \$40M gap.

CRC participation is the #1 IRR driver.
At 50% participation, IRR drops 1,144bps to 3.7%. Breakpoint: 85% for IRR above 7% institutional floor. No other variable carries this magnitude; construction cost, the next largest, moves 825bps.

Unfilled units create an equity gap.
Missing participants mean missing coop sale proceeds. At 75%, 50 unfilled units generate ~\$23M shortfall requiring fallback affordable leasing. The fallback produces income but does not replace the capital event.

Political dependency on climate urgency.
If coastal impacts materialize slower than projected, policy urgency diminishes and participation declines. The mechanism requires the crisis it mitigates.

THREATS

Federal policy reversal.
Administration changes could eliminate buyout funding or block HUD-FEMA coordination. Phase 1 proceeds on existing programs with zero CRC dependency. CRC risk isolated to Phase 2.

Competing policy frameworks.
Simpler managed retreat models may emerge. If a less complex mechanism achieves similar outcomes, the CRC's differentiator becomes wealth preservation and community targeting, not structural necessity.

Sending-area political resistance.
Coastal leaders may resist managed retreat framing; acknowledging risk depresses property values and tax bases. Mitigant: frame as equity preservation. Homeowners gain rather than lose.

PHASE ISOLATION

Phase 1 proceeds on existing financing with zero CRC dependency. Phase 2 is CRC-contingent. If authorization stalls, Phase 1 delivers a viable 200-unit mixed-income development on conventional terms.

PARTICIPATION VS. TIMING

CRC deployment stretched to five years compresses IRR by only 61bps. The critical variable is participation volume, not pace. Marketing through FEMA buyout programs reaches households already in the decision pipeline.

PRICED TO MARKET

Sending-area home values (\$385K-\$750K) bracket the \$400K CRC assumption. The instrument preserves equity that the current system destroys. The alternative is not cheaper; it is more expensive and less productive.

New Housing Development can Provide Deep Social Impact Value by Anchoring Displaced Residents, Building Community Wealth, and Protecting Housing Affordability

“Instead of scrambling to create affordable housing after real estate prices have already risen or pushing private developers to include a few affordable units in their mostly luxury developments, Boston could maximize its public investments by preemptively placing land into ‘a permanently affordable vehicle like a land trust.’”

— John Barros, former Chief of Economic Development, City of Boston

Climate Relocation Credits Solve the Key Challenge of Community Land Trusts

CLT's provide unparalleled social benefits but without government or foundation support, they are unable to gather sufficient equity and debt to gain traction. The CRC solves this by channeling federal disaster mitigation grants into community equity.

Community Land Trusts Prevent Negative Outcomes of Climate Relocation

The CLT ground lease at \$1/year eliminates \$10–15M in land acquisition cost and ensures affordability persists beyond any compliance period or political cycle. For climate migrants who take CRCs, the CLT provides what FEMA buyouts cannot: a permanent destination with guaranteed affordability and structural protections against future displacement pressures that follow them inland.



Development Assumptions

Development

A Two-Entity Structure Separates Development Risk From Cooperative Risk, Allowing Each Component to Close Independently on Its Own Capital Timeline

The Development Partnership closes on 4% LIHTC equity and conventional debt, structures available to any mixed-income Boston project. The REACH Cooperative closes separately at Month 48, purchasing 200 units at \$460K each with CRC member equity, philanthropic grants, and below-market community capital. Splitting the entities means Phase 1 carries no CRC dependency, and the cooperative's capital formation timeline does not delay construction.

A \$1 CLT Ground Lease Returns its Value in Permanent Tax Revenue, Housing, and Economic Development

Through partnership with the City, REACH's strong alignment on climate and affordable housing goals make a \$1 ground lease an innovative investment for municipal leaders. The return comes in

DEVELOPMENT ASSUMPTIONS

Assumption	Benchmark / Source	Primary Risk	Structural Mitigation
OPERATING			
Market Rents: Studio \$2,400; 1BR \$2,800-3,200; 2BR \$3,200-3,600	RentCafe Roxbury Jan 2026; Apartments.com South Boston Apr 2026; 15-31% below prime Boston	Submarket sluggishness delays stabilization	5% vacancy buffer; only 30% of units at market exposure
Coop Charges: Equity-proportional (Migrant ~\$229/mo, Roxbury ~\$3,282/mo)	UHAB NYC; Charlesbank Co-op Boston; Zurich equity model	Income disruption or CRC participation shortfall	Charges set by equity %; deeply below market; 1.5%/yr cap
Vacancy: 5% market, 2.5% coop	Boston Class A: 4.8% (CoStar 2025); LIHTC national: 2.1%	New supply pipeline compresses absorption	70% below-market units with waitlist demand
OpEx: \$18,091/unit DevCo; \$9,450/unit Coop	PREA/Yardi Boston avg \$12,164/unit, adjusted for PH + CLT	Inflation on utilities and insurance	Passive House ~60% energy reduction; \$750/unit reserves
Growth: 3.0% rev, 2.5% exp	Boston 2015-24: ~3.3%/yr (CoStar); CPI 2.8% (BLS 5yr)	Stagnant rents compress NOI	Stress @ 7.5% rate: DSCR 1.00x
CONSTRUCTION & TIMING			
TDC: \$204M (\$510K/unit, \$524/GSF)	RSMeans 2025 Boston; BPDA Mass Timber Accelerator; Bostoncost overruns 5-story: \$450-550K/unit	Timber procurement delays;	Modular prefab limits schedule risk; 7% contingency
Schedule: 30 months, 2-phase (site 6mo + 2x12mo build)	CLT prefab: Candlewood 18 mo; Origine QC 22 mo	Weather, labor shortages, supply chain	Off-site fabrication decouples weather; union labor
CLT Lease: \$1/yr, 99-yr	Dudley CLT (Roxbury) precedent; National CLT Network	Political change or CLT governance failure	Lease executed pre-closing; statutory CLT protections
FINANCING & DISPOSITION			
Capital Stack: 4% LIHTC \$14.6M + 10 soft sources \$45M	MA DHCD QAP 2025-26; MassHousing; FEMA PDM; OBBBA 25% test PASS	Federal policy restricts CRC flows	Phase 1 independent of CRC; statutory LIHTC; layered sources
Perm Rate: 4.5% (tax-exempt bonds)	10-Yr Treasury 4.30% + 20bps; MassHousing bond program	Rate spike before perm conversion	DSCR 1.41x stabilized; rate lock at close
Exit Cap: 5.25%, Year 15	CBRE H2 2025: 4.50-4.75%; Freddie Apr 2026: Suburban A 5.25%; +75bps Roxbury	Cap rate expansion in rate environment	IRR viable above stress caps; 15yr hold = timing flexibility
Coop Appreciation: CPI + 25% = 3.75% (Zurich)	Zurich use-value dividend; Champlain Housing Trust 4%/yr	Inflation erodes capped appreciation	CPI linkage tracks purchasing power; \$1.2M equity @ Yr 30

CONSTRUCTION BUDGET

CSI Division	Amount	% Hard	Notes
02 - Existing Conditions	\$6.3M	4.1%	Site demo, abatement, utilities
03 - Concrete	\$18.3M	11.9%	Foundations, podium, cores
05 - Metals	\$2.2M	1.4%	Structural steel, misc metals
06 - Wood/Plastics/CLT	\$45M	29.3%	Mass timber structure, CLT panels
07 - Thermal & Moisture	\$10.4M	6.8%	Passive House envelope, insulation
08 - Openings	\$7.1M	4.6%	Triple-pane windows, doors
09 - Finishes	\$11.2M	7.3%	Interior finishes, paint, flooring
10-14 - Specialties/Equip	\$3.2M	2.1%	Appliances, specialties
21 - Fire Suppression	\$2.6M	1.7%	Sprinkler systems
22 - Plumbing	\$7.6M	5.0%	Domestic water, waste, gas
23 - HVAC	\$12.0M	7.9%	ERV, heat pumps, distribution
26 - Electrical	\$9.6M	6.2%	Power, lighting, low voltage
31 - Earthwork	\$1.6M	1.0%	Grading, excavation
32 - Exterior Improvements	\$5.2M	3.4%	Landscaping, paving, site work
01 - General Requirements	\$11.4M	7.4%	8% of divisions
Total Hard Costs	\$153.4M	100%	\$394/GSF

SOFT COSTS

Line Item	Amount	% TDC	Basis
Architecture & Engineering	\$12.3M	6.0%	8% of hard costs
Legal Fees	\$767K	0.4%	Per hard costs
Equity Placement Fee	\$709K	0.3%	3% of LIHTC + conv equity
Developer Fee (Upfront)	\$6.1M	3.0%	4% of hard costs
Deferred Developer Fee	(\$2.5M)	(1.2%)	-40% of upfront fee
Permits & Impact Fees	\$2M	1.0%	\$5,000/unit
Insurance (Construction)	\$5.8M	2.8%	1.5% x 30 months
Property Taxes (Constr.)	\$4.6M	2.3%	1.2% x 30 months
Marketing & Lease-up	\$300K	0.1%	\$1,500/unit (dev co)
Contingency	\$11.7M	5.7%	7% of hard + A&E + legal
Total Soft Costs	\$41.7M	20.6%	\$107/GSF

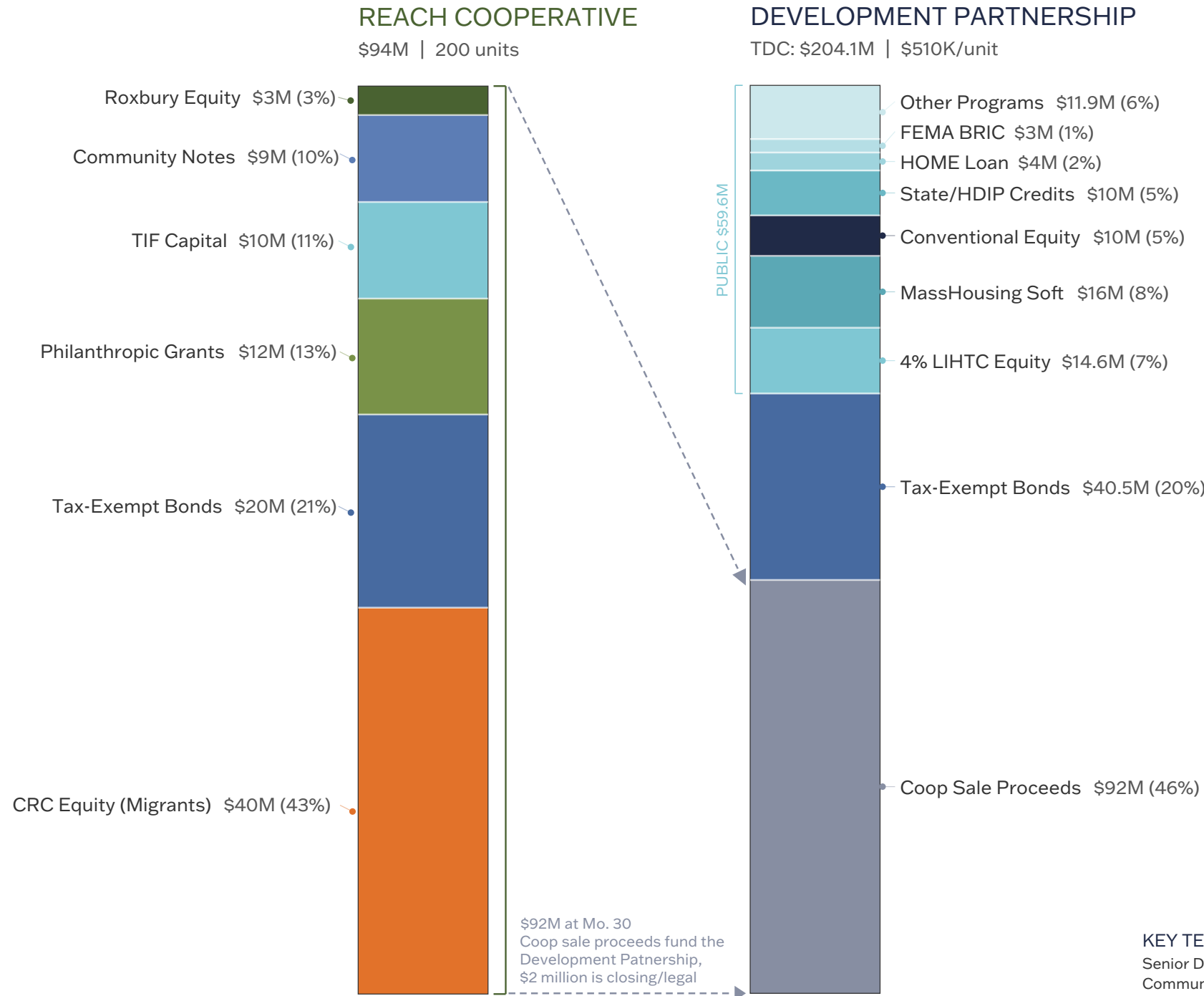
\$202M
Total Dev Cost

\$522/GSF
All-In Cost

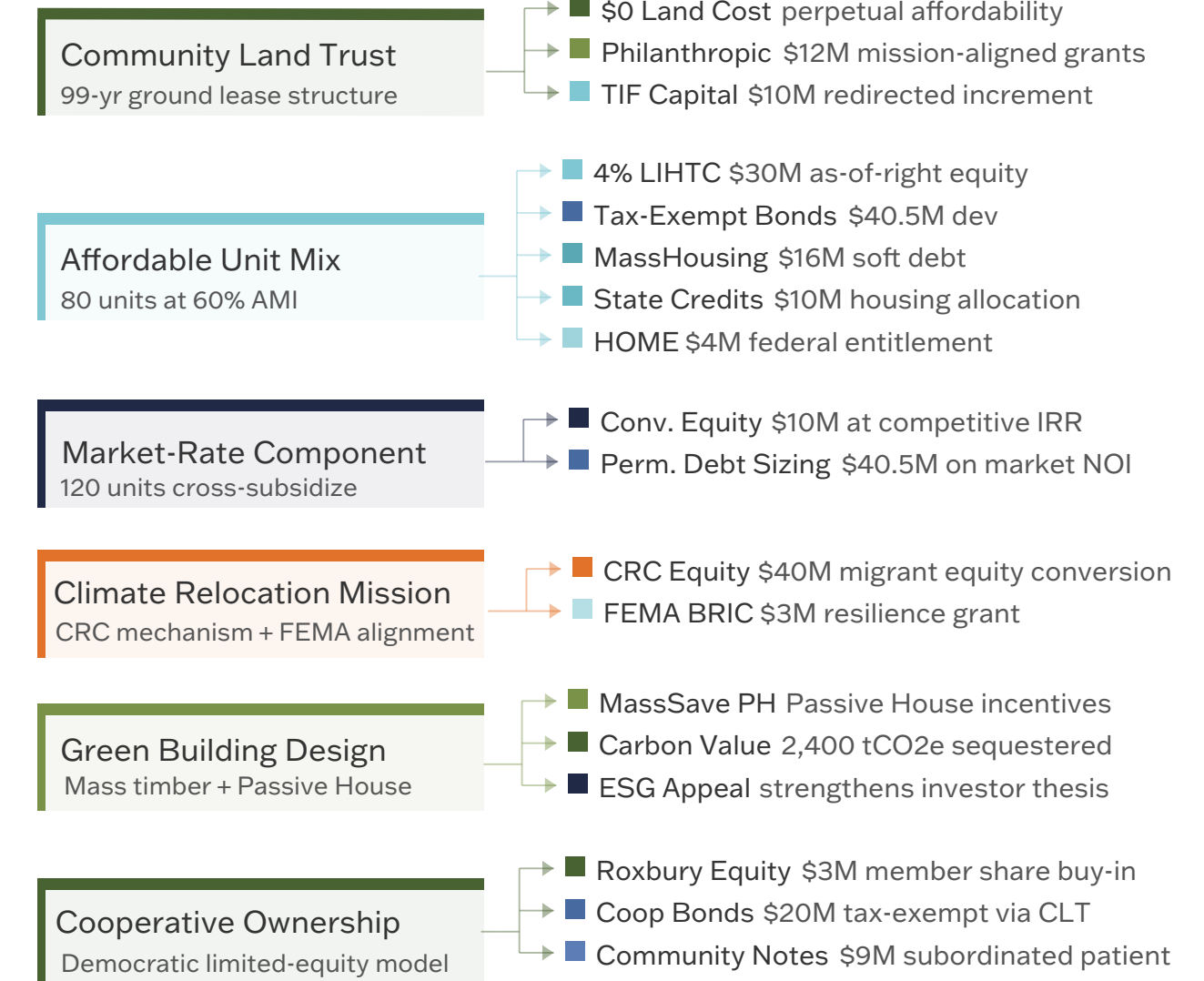
\$394/GSF
Hard Cost

\$153M
Hard Costs

\$42M
Soft Costs



How Design Decisions Unlock the Capital Stack



KEY TERMS

Senior Debt MassHousing Bonds | 4.5% | 30-yr | Soft Sources 10 programs | 0-2% | \$45.0M | Coop Bonds \$20M | 4.5% | 30-yr | Tax-exempt
 Community Notes \$9M | 2.5% | 15-yr | Patient | CLT Lease 99-yr at \$1/yr | Land = \$0

Six Design Decisions Unlock the Capital Stack, From Zero Land Cost Through CLT Ground Lease to CRC Funded Cooperative Equity

Through partnership with the City, REACH's strong alignment on climate and affordable housing goals make a \$1 ground lease an innovative investment for municipal leaders. The return comes in

\$81.6M in Public Capital Represents Roughly 40% of the total development cost; REACH yields social impact returns

CSI Division	Amount	% Hard	Notes
02 - Existing Conditions	\$6.3M	4.1%	Site demo, abatement, utilities
03 - Concrete	\$18.3M	11.9%	Foundations, podium, cores
05 - Metals	\$2.2M	1.4%	Structural steel, misc metals
06 - Wood/Plastics/CLT	\$45M	29.3%	Mass timber structure, CLT panels
07 - Thermal & Moisture	\$10.4M	6.8%	Passive House envelope, insulation
08 - Openings	\$7.1M	4.6%	Triple-pane windows, doors
09 - Finishes	\$11.2M	7.3%	Interior finishes, paint, flooring
10-14 - Specialties/Equip	\$3.2M	2.1%	Appliances, specialties
21 - Fire Suppression	\$2.6M	1.7%	Sprinkler systems
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SOFT COSTS

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Total Soft Costs	\$41.7M	20.6%	\$107/GSF

\$202M

Total Dev Cost

\$522/GSF

All-In Cost

\$394/GSF

Hard Cost

\$153M

Hard Costs

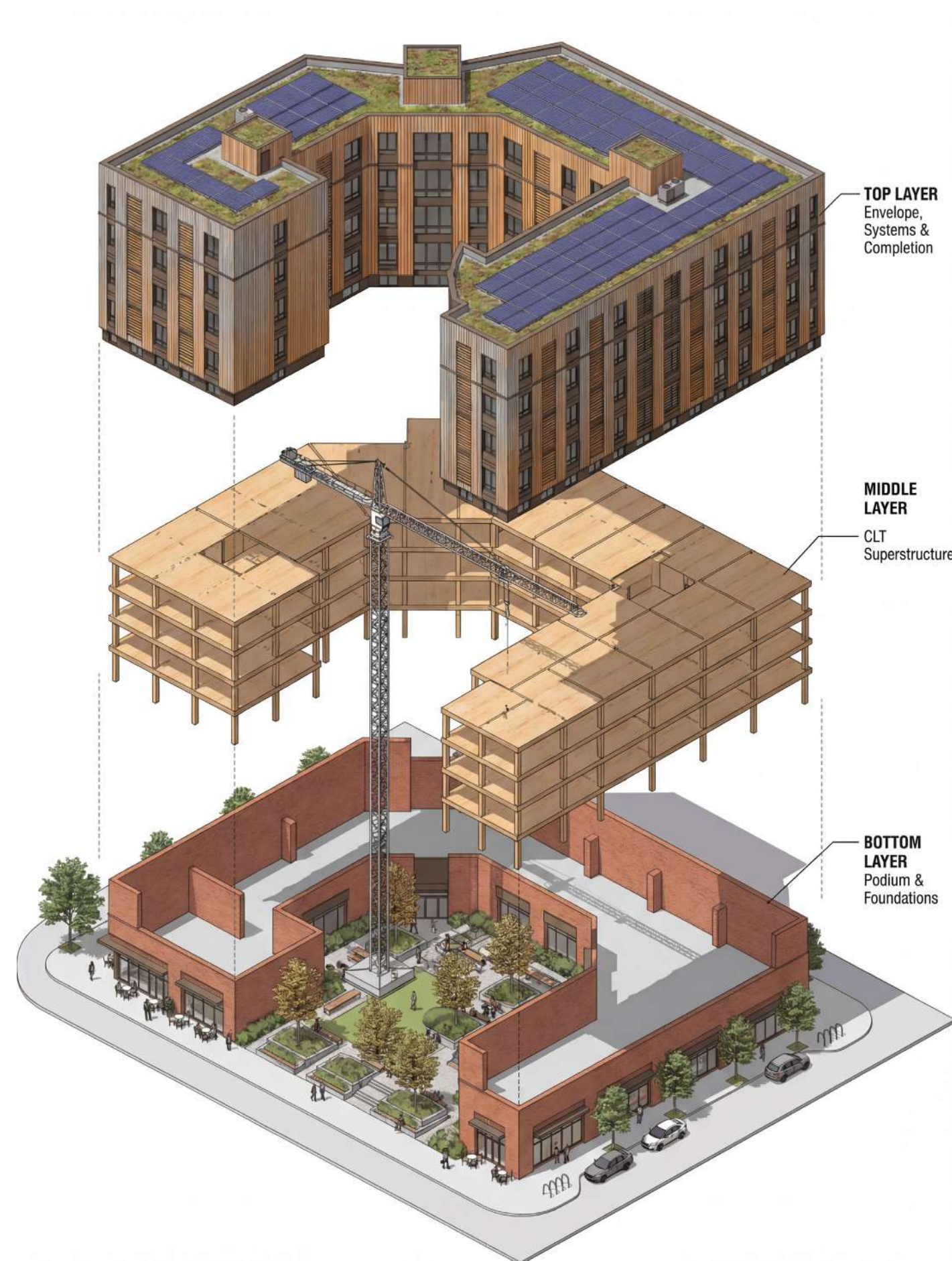
\$42M

Soft Costs

Mass Timber at \$45M and Passive House Envelope at \$10.4M Produce a Net Premium that is Offset by Schedule Compression and HVAC Downsizing

Wood/Plastics/CLT at 29.3% of hard costs replaces what would conventionally be a 9–12% allocation to wood framing, reflecting the structural shift from stick-built to engineered timber. The corresponding concrete allocation drops to 11.9%, roughly half the 20–25% typical of conventional mid-rise.

Thermal and Moisture Protection at 6.8% and Openings at 4.6% carry the Passive House premium: continuous mineral wool insulation, air barrier at 0.6 ACH50, and triple-pane IGU. These envelope costs are partially offset by a reduced HVAC allocation (7.9% vs. a typical 10–12%), because the Passive House envelope shrinks heating and cooling loads enough to downsize mechanical equipment.



TOP LAYER
Envelope,
Systems &
Completion

MIDDLE LAYER

CLT
Superstructure

BOTTOM LAYER

Podium &
Foundations

200 Retained Units — Stabilized Year 1

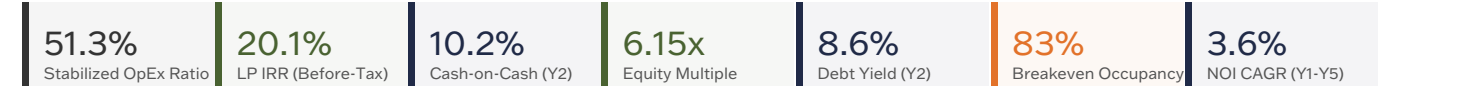
DEVELOPER OPERATING PRO FORMA	YEAR 1	YEAR 2
REVENUE		
Market-Rate Revenue	\$4,440,000	\$4,573,200
Affordable Revenue	\$1,535,400	\$1,581,462
Retail Revenue (NNN)	\$615,000	\$633,450
Amenity Revenue	\$438,000	\$451,140
Parking Revenue	\$90,000	\$92,700
Other Income (Laundry/Storage)	\$30,000	\$30,900
GROSS POTENTIAL INCOME	\$7,148,400	\$7,362,852
Less: Vacancy Loss	(\$260,385)	(\$268,197)
EFFECTIVE GROSS INCOME	\$6,888,015	\$7,094,655
OPERATING EXPENSES		
Property Management	\$344,401	\$354,733
Maintenance & Repairs	\$600,000	\$615,000
Utilities (Common Area)	\$480,000	\$492,000
Insurance	\$360,000	\$369,000
Real Estate Taxes	\$1,080,000	\$1,107,000
Administrative	\$120,000	\$123,000
Marketing	\$100,000	\$102,500
Security	\$100,000	\$102,500
Grounds/Landscaping	\$100,000	\$102,500
Operating Expenses Subtotal	\$3,284,401	\$3,368,233
Replacement Reserve	\$150,000	\$150,000
Operating Reserve	\$100,000	\$100,000
TOTAL OPERATING EXPENSES	\$3,534,401	\$3,618,233
NET OPERATING INCOME (NOI)	\$3,353,614	\$3,476,423
Coop Sale Adjustment (Capital Item)	\$4,424,852	—
DEBT SERVICE		
Tax-Exempt Bond Payment	\$2,457,198	\$2,457,198
CASH FLOW BEFORE WATERFALL		
	\$5,321,267	\$1,019,224
KEY METRICS		
DSCR	1.36x	1.41x
Yield on Cost	3.3%	3.4%
Operating Expense Ratio	51.3%	51.0%

Developer Partnership — Combined Stress Testing

SCENARIO ANALYSIS	Base	Downside	Stress	Upside	Mitigant
ASSUMPTIONS					
Market Vacancy	5.0%	10.0%	15.0%	3.0%	CLT ground lease: \$0 land cost
Revenue Growth	3.0%	1.5%	0.0%	4.0%	Modular CLT: cost certainty
Exit Cap Rate	5.2%	6.5%	7.0%	5.0%	Coop sale: \$92M structural floor
KEY METRICS					
Year 1 NOI	\$3.5M	\$3.1M	\$2.7M	\$3.6M	
DSCR	1.41x	1.26x	1.11x	1.48x	Section 8 PBVs: income floor
Exit Value	\$100.2M	\$58.8M	\$39.0M	\$125.6M	
Exit Equity	\$49.9M	\$9.3M	(\$10.1M)	\$74.8M	Coop sale: \$92M structural floor
IRR Proxy	20.3%	—	—	—	

Developer Partnership — 200 Retained Units

5-YEAR CASH FLOW PROJECTION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
REVENUE					
Market-Rate Revenue	\$4,440,000	\$4,573,200	\$4,710,396	\$4,851,708	\$4,997,259
Affordable Revenue	\$1,535,400	\$1,581,462	\$1,628,906	\$1,677,773	\$1,728,106
Retail Revenue (NNN)	\$615,000	\$633,450	\$652,454	\$672,027	\$692,188
Amenity Revenue	\$438,000	\$451,140	\$464,674	\$478,614	\$492,973
Parking Revenue	\$90,000	\$92,700	\$95,481	\$98,345	\$101,296
Other Income	\$30,000	\$30,900	\$31,827	\$32,782	\$33,765
EFFECTIVE GROSS INCOME	\$6,888,015	\$7,094,655	\$7,307,495	\$7,526,720	\$7,752,522
OPERATING EXPENSES					
Property Management	\$344,401	\$354,733	\$365,375	\$376,336	\$387,626
Maintenance & Repairs	\$600,000	\$615,000	\$630,375	\$646,134	\$662,288
Utilities	\$480,000	\$492,000	\$504,300	\$516,907	\$529,830
Insurance	\$360,000	\$369,000	\$378,225	\$387,681	\$397,373
Real Estate Taxes	\$1,080,000	\$1,107,000	\$1,134,675	\$1,163,042	\$1,192,118
Administrative	\$120,000	\$123,000	\$126,075	\$129,227	\$132,458
Marketing	\$100,000	\$102,500	\$105,062	\$107,689	\$110,381
Security	\$100,000	\$102,500	\$105,062	\$107,689	\$110,381
Grounds/Landscaping	\$100,000	\$102,500	\$105,062	\$107,689	\$110,381
Operating Expenses Subtotal	\$3,284,401	\$3,368,233	\$3,454,212	\$3,542,394	\$3,632,836
Replacement Reserve	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000
Operating Reserve	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000
TOTAL OPERATING EXPENSES	\$3,534,401	\$3,618,233	\$3,704,212	\$3,792,394	\$3,882,836
NET OPERATING INCOME	\$3,353,614	\$3,476,423	\$3,603,283	\$3,734,326	\$3,869,686
Coop Sale Adjustment	\$4,424,852	—	—	—	—
DEBT SERVICE					
Tax-Exempt Bond Payment	\$2,457,198	\$2,457,198	\$2,457,198	\$2,457,198	\$2,457,198
CASH FLOW BEFORE WATERFALL					
	\$5,321,267	\$1,019,224	\$1,146,085	\$1,277,127	\$1,412,487
KEY RATIOS					
DSCR	1.36x	1.41x	1.47x	1.52x	1.57x
Yield on Cost	3.3%	3.4%	3.6%	3.7%	3.8%



The Development Partnership Stabilizes at \$3.48M Net Operating Income with 1.38x Debt Service Coverage in Year Two

The Year 1 coop sale adjustment of \$4.4M represents the cooperative's purchase of the Phase 2 component, flowing through the Development Partnership as a capital item before settling into the stabilized Year 2 operating pro forma. By Year 5, NOI grows to \$3.87M at a 3.6% compound annual rate and DSCR reaches 1.57x, providing increasing headroom against the fixed \$2.46M annual debt service. The 83% break even occupancy means the development can absorb 17 percentage points of vacancy above the 5% base case before debt service is threatened.

200 Units (100 Climate Migrant + 100 Roxbury Resident)

COOPERATIVE OPERATING PRO FORMA	Year 1	Year 2
CARRYING CHARGE REVENUE		
Migrant Carrying Charges (100 units)	\$913,712	\$927,417
Roxbury Carrying Charges (100 units)	\$2,446,064	\$2,482,755
Parking Revenue	\$90,000	\$91,350
Other Income (Laundry/Storage)	\$20,000	\$20,300
GROSS POTENTIAL INCOME	\$3,469,775	\$3,521,822
Less: Vacancy/Collection Loss	(\$86,744)	(\$88,046)
EFFECTIVE GROSS INCOME	\$3,383,031	\$3,433,776
OPERATING EXPENSES		
Property Management	\$132,000	\$135,300
Maintenance & Repairs	\$220,000	\$225,500
Utilities (Common Area)	\$480,000	\$492,000
Insurance	\$300,000	\$307,500
Real Estate Taxes (PILOT)	\$250,000	\$256,250
Administrative	\$45,000	\$46,125
Cooperative Governance	\$40,000	\$41,000
Security	\$30,000	\$30,750
Grounds / Landscaping	\$20,000	\$20,500
Operating Expenses Subtotal	\$1,517,000	\$1,554,925
Replacement Reserve	\$150,000	\$150,000
Operating Reserve	\$50,000	\$50,000
TOTAL OPERATING EXPENSES	\$1,717,000	\$1,754,925
NET OPERATING INCOME	\$1,666,031	\$1,678,851
DEBT SERVICE		
Tax-Exempt Bonds	\$1,216,045	\$1,216,045
Community Investment Notes	\$426,731	\$426,731
Total Debt Service	\$1,642,775	\$1,642,775
CASH AVAILABLE FOR DISTRIBUTION	\$23,256	\$36,076
Surplus to Members (Use-Value Dividend)	\$23,256	\$36,076

54% below market

\$1,400/mo

Avg Carrying Charge

Y1 Total OpEx / EGI

50.8%

Operating Expense Ratio

Year 1 stabilized

1.01x

Debt Service Coverage

vs. 5% market-rate

2.5%

Coop Vacancy Rate

Replacement + operating

\$1,000/yr

Reserve per Unit

Compound annual growth

0.7%

NOI CAGR (Y1-Y5)

REACH Cooperative — 200 Units

5-YEAR CASH FLOW PROJECTION	Year 1	Year 2	Year 3	Year 4	Year 5
REVENUE					
Migrant Carrying Charges	\$913,712	\$927,417	\$941,329	\$955,448	\$969,780
Roxbury Carrying Charges	\$2,446,064	\$2,482,755	\$2,519,996	\$2,557,796	\$2,596,163
Parking Revenue	\$90,000	\$91,350	\$92,720	\$94,111	\$95,523
Other Income	\$20,000	\$20,300	\$20,604	\$20,914	\$21,227
GPI	\$3,469,775	\$3,521,822	\$3,574,649	\$3,628,269	\$3,682,693
Vacancy Loss	(\$86,744)	(\$88,046)	(\$89,366)	(\$90,707)	(\$92,067)
EGI	\$3,383,031	\$3,433,776	\$3,485,283	\$3,537,562	\$3,590,626
OPERATING EXPENSES					
Property Management	\$132,000	\$135,300	\$138,682	\$142,150	\$145,703
Maintenance & Repairs	\$220,000	\$225,500	\$231,137	\$236,916	\$242,839
Utilities	\$480,000	\$492,000	\$504,300	\$516,907	\$529,830
Insurance	\$300,000	\$307,500	\$315,188	\$323,067	\$331,144
RE Taxes (PILOT)	\$250,000	\$256,250	\$262,656	\$269,223	\$275,953
Administrative	\$45,000	\$46,125	\$47,278	\$48,460	\$49,672
Coop Governance	\$40,000	\$41,000	\$42,025	\$43,076	\$44,153
Security	\$30,000	\$30,750	\$31,519	\$32,307	\$33,114
Grounds	\$20,000	\$20,500	\$21,012	\$21,538	\$22,076
OpEx Subtotal	\$1,517,000	\$1,554,925	\$1,593,798	\$1,633,643	\$1,674,484
Replacement Reserve	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000
Operating Reserve	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000
Total OpEx	\$1,717,000	\$1,754,925	\$1,793,798	\$1,833,643	\$1,874,484
NOI	\$1,666,031	\$1,678,851	\$1,691,485	\$1,703,919	\$1,716,142
DEBT SERVICE					
Tax-Exempt Bonds	\$1,216,045	\$1,216,045	\$1,216,045	\$1,216,045	\$1,216,045
Community Notes	\$426,731	\$426,731	\$426,731	\$426,731	\$426,731
Total DS	\$1,642,775	\$1,642,775	\$1,642,775	\$1,642,775	\$1,642,775
CASH FOR DISTRIBUTION	\$23,256	\$36,076	\$48,710	\$61,144	\$73,366
KEY RATIOS					
DSCR	1.01x	1.02x	1.03x	1.04x	1.04x

The Development Partnership Stabilizes at \$3.48M Net Operating Income with 1.38x Debt Service Coverage in Year Two

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Cooperative Housing Ownership Creates a Pathway for Black Households and Community Members Alike to Build Wealth

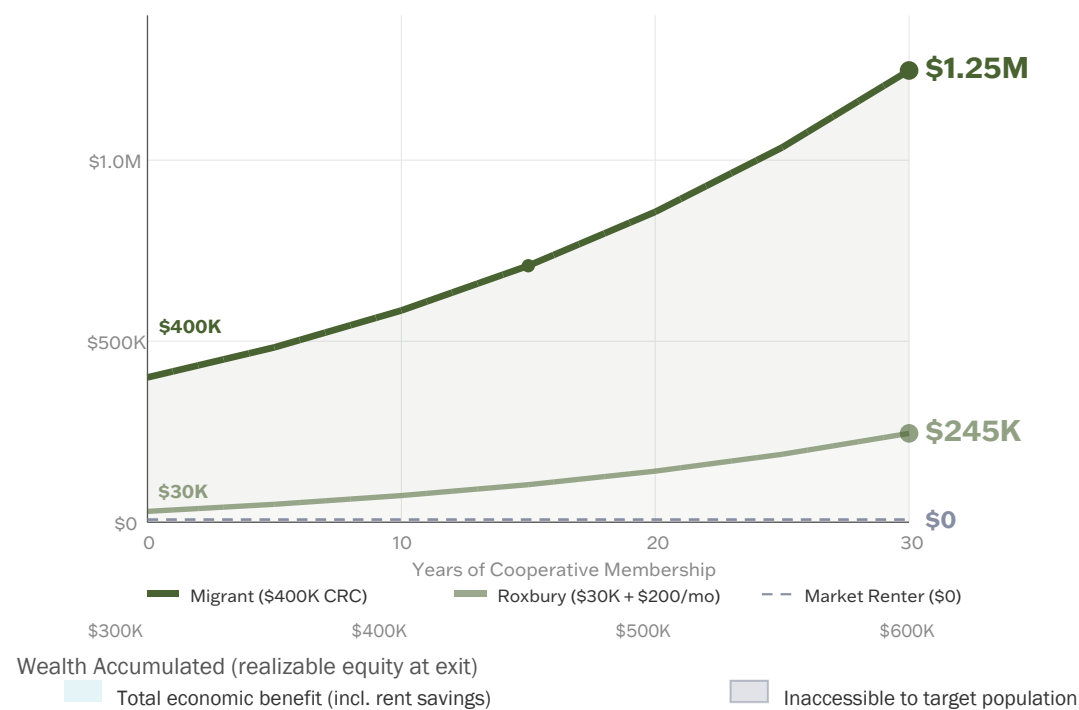
The 30-Year Net Advantage line at the bottom of the table captures the full picture. A Roxbury resident accumulates \$666,391 in total economic benefit against a renter baseline of near zero. The Boston Fed's "Color of Wealth in Boston" found median Black household wealth of \$8. The cooperative does not close that gap entirely. It builds the structure through which closing becomes possible.

Wealth Building: REACH vs. Alternatives



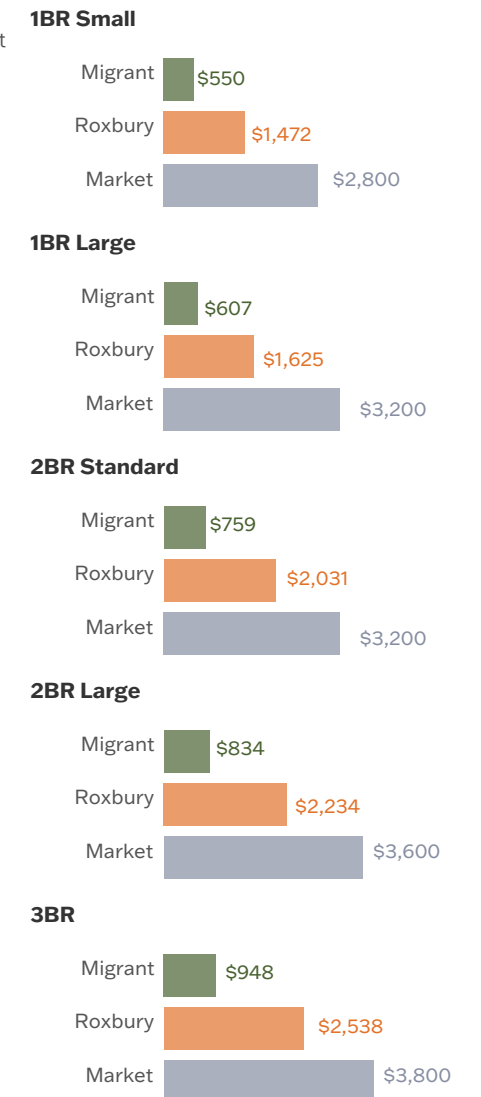
Wealth-Building Trajectory

30-year member equity under 3.75% appreciation cap (CPI + 25%)



Monthly Cost Comparison

All cooperative unit types vs. Roxbury new-construction comps



Cooperative Membership Produces \$267,000 in Realizable Equity for a Roxbury Resident and \$1.25M for a Climate Migrant Over Thirty Years

Cooperative wealth builds through four channels. Share appreciation under the 3.75% annual cap compounds the initial entry value over thirty years. Monthly equity contributions function as forced savings, fully realizable at exit or inheritable. Annual dividends distribute surplus operating income after reserves and debt service. And the gap between carrying charges and market rent, which widens every year as market rents escalate faster than cooperative costs, represents the largest wealth effect of all: money that never leaves the household.

The 30-Year Net Advantage line at the bottom of the table captures the full picture. A Roxbury resident accumulates \$666,391 in total economic benefit against a renter baseline of near zero. The Boston Fed’s “Color of Wealth in Boston” found median Black household wealth of \$8. The cooperative does not close that gap entirely. It builds the structure through which closing becomes possible.

Wealth Composition at Year 30

	Migrant	Roxbury	Renter
Initial Equity	\$400,000	\$30,000	\$0
Equity Contributions	\$0	\$72,000	\$0
Appreciation (3.75% cap)	\$806,989	\$133,153	\$0
Cumulative Dividends	\$40,793	\$10,315	\$0
Total Wealth	\$1,247,782	\$245,469	\$0
Monthly Carrying Charge (2BR)	\$759/mo	\$2031/mo	\$3200/mo
Monthly Savings vs. Market	\$2,441/mo	\$1,169/mo	-
30-Year Housing Savings	\$878,911	\$420,922	\$0
30-Year Net Advantage	\$2,126,692	\$666,391	\$0

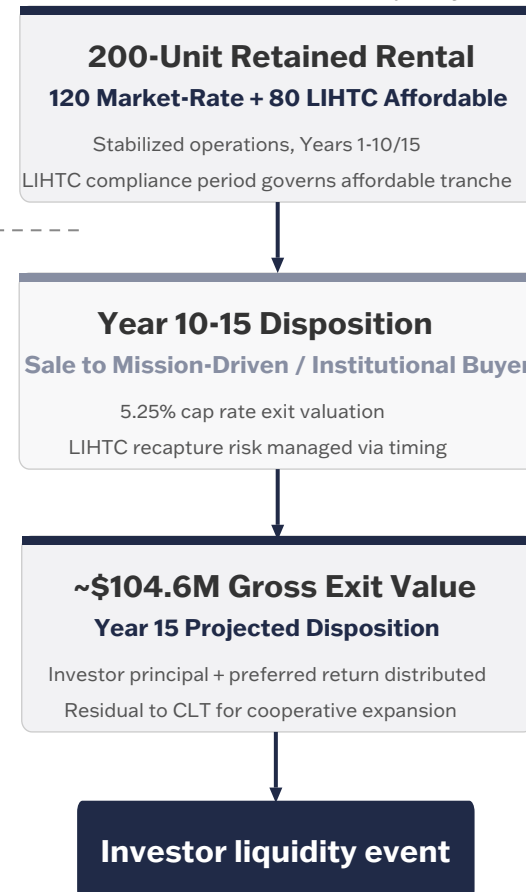
COOPERATIVE TRACK

200 units | Community ownership



RETAINED RENTAL TRACK

200 units | Investor liquidity



Hold & Distribute SECONDARY
Indefinite
\$9.4% - 22.6% yield
Continue harvesting operating cash if disposition market softens

Sale PRIMARY
Year 10-15
5.25% cap / \$91-105M
Whole-asset or bifurcated sale to mission-driven buyer

Partial Sale TERTIARY
Year 10-15
\$87-96M blended
Market tranche at 4.75-5.25% / affordable tranche at 5.75-6.25%

Public / CDFI Takeout BACKSTOP
As needed
5.50-6.00% cap
MassHousing Momentum Fund or BlueHub consortium

CASH FLOW SNAPSHOTS

Year	NOI	Debt Svc	Distrib.	LP Share	GP Share	Cum LP	Notes
1	\$3.4M	\$2.5M	\$4.8M	\$4.8M	—	\$4.8M	Yr 1 incl. reserve release; 100% to T1 ROC
5	\$3.9M	\$2.5M	\$0.9M	\$0.9M	—	\$7.7M	Still in T1 (capital return phase)
10	\$4.6M	\$2.5M	\$2.0M	\$1.6M	\$0.4M	\$15.5M	Capital returned Yr 8; now in T2/T3/T4
15	\$5.5M	\$2.5M	\$2.9M	\$2.3M	\$0.5M	\$28.1M	Stabilized; exit adds \$39.0M LP + \$9.8M GP

Comparable Transactions

Property	Submarket	Date	Units	Price	\$/Unit	Cap Rate	Relevance
1330 Boylston	Fenway	Jan 2025	200	\$145.0M	\$725,000	~4.5%	Prime-core floor
Luka on the Common	Downtown	Sep 2024	398	\$212.0M	\$532,663	~5.3%	Core urban scale
Tower at One Greenway	Chinatown	Oct 2024	217	\$123.4M	\$568,664	~5.5%	Mixed-income context
Velo Forest Hills	Jamaica Plain	Sep 2024	250	\$102.5M	\$410,000	~5.0-5.3%	Best corridor comp
3200 Washington St	JP / Egleston	Jul 2025	73	\$37.8M	\$517,808	~5.0-5.3%	Closest Roxbury-adjacent
Strata Malden	Malden	Jun 2025	295	\$112.5M	\$381,356	~5.5%	Outer-ring benchmark
Altitude Apartments	Malden	Mar 2025	919	\$268.0M	\$291,621	~5.8%	Value-add upper bound
REACH Roxbury (Yr 15)	Roxbury	2041	200	\$104.6M	\$523,206	5.25%	Base case exit

Source: CoStar, Real Capital Analytics, public filings. REACH assumes stabilized NOI at 5.25% cap, Year 15.

Buyer Profiles

Buyer	Type	Scale / Precedent	REACH Fit	Appetite
POAH	Mission-Driven	13,000+ units; \$243M MA deal	Full 200-unit whole-asset	\$90-110M range
WinnCompanies	Mixed-Income	100,000 units; \$62M McCormack	Full 200-unit whole-asset	\$90M+ capacity
Jonathan Rose Cos.	Impact Fund	Fund VI: \$660M; Boston target	Full 200-unit or JV	\$90-110M capacity
Nuveen Real Estate	Institutional	Velo Forest Hills \$102.5M	Market-rate tranche or JV	Unlimited; conditional
BlueHub Capital	CDFI / Community	\$147M Roxbury; \$36M in 2024	Consortium lead, \$5-25M	Structured consortium

Investor / Tier	OPERATING CASH FLOW			PROCEEDS & TOTAL		RETURNS	
	Equity In	Return Structure	Operating Cash	Exit Proceeds	Total Return	IRR	Multiple
LIHTC (4% Credits)	\$14.6M	10yr credits + depr. + Yr 15 buyout	\$14.3M	\$1.5M	\$15.8M	6.84%	1.08x
Conv. Investor (LP)	\$10.0M	4-tier: ROC → pref → catch-up → 80/20	\$22.5M	\$39.0M	\$61.5M	20.15%	6.15x
T1: Return of Capital		100% → LP until returned	\$10.0M (Yr 1-8)	—	\$10.0M		1.00x
T2: 8% Cum. Pref		100% → LP until 8%	\$11.7M (Yr 10-15)	\$12.3M	\$24.1M		2.41x
T3: GP Catch-up		100% → GP (20% of T1+T2)	\$5.4M	\$3.1M	\$8.5M		—
T4: Residual (80/20)		80% LP / 20% GP	\$0.8M/\$0.2M	\$26.6M/\$6.7M	\$27.4M/\$6.9M		—
Developer / GP	\$0	Fees + promote (no equity)	\$10.3M	\$9.8M	\$26.3M	∞	∞
Dev Fee (upfront)					\$6.2M		
Deferred Fee (Yr 2-7)					\$2.5M		
AM Fees (15yr)					\$2.3M		
GP Promote (T3+T4)					\$5.6M		
Exit Promote					\$9.8M		
Unlevered Project	\$202.3M	Incl. coop sale at Yr 2	—	—	—	2.79%	—
Mkt Equiv. (no policy)	\$202.3M	All 400 units at market	—	—	—	6.63%	—

CONVENTIONAL LP

20.15%	IRR (Before-Tax)
6.15x	Equity Multiple
\$61.5M	Total LP Returns
\$10.0M	Equity Invested
Year 8	Capital Returned
\$6.2M	NPV @ 13%
LIHTC INVESTOR	
6.84%	IRR (After-Tax)
1.08x	Equity Multiple
\$14.6M	Equity Invested
\$15.8M	Total Returns
DEVELOPER / GP	
\$26.3M	Total Developer Cash
\$0	Equity Invested
∞	IRR (No Capital at Risk)
PROJECT	
\$202.3M	Total Development Cost
2.79%	Unlevered Project IRR
6.63%	Market Equiv. IRR

After year 10 Development Splits, Rental Units Sell at 5.25% Cap to Mission Aligned Buyers and the Cooperative Becomes Permanently Resident-Owned

The cash flow waterfall shows how capital returns to each tier: LP receives 100% until 8% cumulative preferred, then 80/20 residual split with GP. The conventional investor's 20.15% IRR and 6.15x equity multiple reflect both operating cash flow and exit proceeds. For residents, investor exit is the moment the cooperative becomes fully self-governing under the CLT ground lease.

STRENGTHS

Permanent climate safety.

Roxbury sits 60 to 100 feet above sea level. Zero hundred-year flood exposure. Site selection is itself climate mitigation.

Zero land basis.

The CLT ground lease at \$1/yr eliminates \$60 to \$80M in land acquisition cost, enabling construction quality that affordable projects typically sacrifice.

Mass timber and Passive House.

Modular CLT locks pricing and compresses schedule. Passive House locks energy costs at occupancy. Carbon-negative: 138,008 MT CO2 avoided over twenty years.

82.5% breakeven with demand-insulated revenue.

Seventy percent of units are affordable or cooperative. Developer DSCR: 1.36x Year 1, 1.57x Year 5. Four independent affordability locks prevent single-point failure.

OPPORTUNITIES

Roxbury market fundamentals.

120 market-rate units enter an undersupplied submarket with strong demand and transit access at Dudley Square. Rents 10 to 31% below nearest new-construction comps accelerate absorption.

ESG capital fit.

138,008 MT CO2 avoided. \$217M household wealth created. 20.1% levered IRR, 6.15x equity multiple at Year 15.

Massachusetts institutional alignment.

ResilientCoasts Initiative (November 2025) creates momentum. EEA, MassHousing, MassDevelopment, and Boston provide overlapping support in a state building managed retreat.

National replication.

Every climate-safe city with surplus land is a potential site. Pittsburgh, Buffalo, Cleveland, Detroit, Rochester: \$19.5B addressable market. Modular template; local parameters change, structure transfers.

WEAKNESSES

Member recruitment execution.

Two hundred cooperative members must materialize as committed buyers. Mitigant: 70% pre-commitment threshold gates construction, twelve months of pre-occupancy education, phased recruitment stabilizes Phase 1 before Phase 2. Roxbury recruitment through Nuestra Comunidad CDC (forty-three years).

Construction cost volatility.

10% escalation on \$154.3M hard costs compresses equity IRR from 20.3% to 9.7%; at 20%, returns fall to 5.4%. \$11.6M contingency reserve (7%), fixed-price modular contracts, and phased delivery contain the exposure.

Dual-entity coordination.

Combining LIHTC partnership with limited-equity cooperative requires cross-entity asset management. Every component individually precedented. Professional property management and organizing staff hold the coordination together.

CLT operating sustainability.

CLTs depend on episodic grant funding (Lim, p. 165). REACH resolves it through revenue design: Developer NOI of \$3.35M/yr covers cooperative operating expenses at 195%.

THREATS

Construction market disruption.

Mass timber supply chains maturing but not commodity-stable. \$11.6M contingency, fixed-price contracts, phased delivery contain moderate escalation. At 10% overrun, equity IRR compresses to 9.7%; at 20%, returns breach thresholds.

Combined market stress.

Downside (10% vacancy, 1.5% growth, 6.5% cap): DSCR 1.26x, exit equity \$9.3M. Stress (15% vacancy, 0% growth, 7.0% cap): DSCR 1.11x, exit equity negative. Boston Class A vacancy has not sustained 10% in the modern era.

Economic recession.

A downturn pressures market-rate absorption, tax credit pricing, and investor appetite simultaneously. Seventy percent of units are affordable or cooperative, insulating the revenue majority.

Local absorption risk.

If demand softens, the 70% pre-commitment threshold delays construction rather than destroying it. Co-op members save \$10,000/yr. Phase 1 pencils as conventional mixed-income, viable absent the cooperative thesis entirely.

PRE-CONSTRUCTION

Risks cluster around financing and recruitment. Federal authorization delays trigger state and philanthropic substitution; the 70% pre-commitment threshold prevents construction without demonstrated demand.

POST-CONSTRUCTION

Passive House locks energy costs. Long-term service contracts stabilize operating expenses. Professional management handles operations; residents govern but do not manage.

RISK-RETURN POSITION

The structure accepts a 2.79% unlevered return in exchange for \$217M in community wealth that conventional affordable housing cannot produce. Every major risk has a structural mitigant. None has a guarantee.



Partner Ecosystem

Roxbury is Already Home to One of the Most Successful CLT's, Now Its Reputation can Grow

BWSC transfers land to the Roxbury CLT, which ground-leases it at \$1/year to the Development Partnership for Phase 1 and to the Cooperative for Phase 2. Every partner has a proven track record: Dudley Neighbours Inc has stewarded CLT land for forty years, Nuestra Comunidad CDC has delivered mixed-income housing in Roxbury for forty-three, and YouthBuild Boston has trained pre-apprentices on union sites since 1991. The partnership is assembled from existing institutional capacity that can deliver on innovation.



At Risk Coastal Communities

Communities facing climate risks can partner with REACH and state agencies to help their residents relocate with confidence and security.



Massachusetts Office of Coastal Zone Management

State Agencies

The Office of Coastal Zone Management and other state agencies are committed to support relocation efforts and can provide technical assistance and outreach at sending sites.



Union Labor & Experience

Union works ensure high quality construction and experienced contractors that are able to implement new and innovative building technologies while supporting local economies.



PUBLIC



PRIVATE



PARTNERSHIP

Public Private Partnership

The Boston Sewer and Water Commission (current land owner), CLT, Developer, and Cooperative form a public private partnership that secures access to public land, low interest debt, and efficient construction and operation.



Youth Build Boston

Local organizations like Youth Build Boston provide community insights and support workforce development that strengthens the futures of Roxbury residents.



Dudley Neighbors Inc. Land Trust

DNI, one of the most successful urban CLTs will provide critical support through the Greater Boston CLT Network.



REACH Roxbury

Development benefits from a coordinated group of partners working towards the same goals.



A \$3.55M Passive House Premium on \$153.4M in Hard Costs Produces a Carbon-Negative Building and Cuts Resident Energy Costs in Half

The premium is 2.3% of the construction budget. It buys a building that sequesters more carbon than it emits at completion and saves each household \$1,200 per year in energy costs. Those utility savings flow directly to residents as reduced carrying charges, not to the investor as increased NOI.

The mass timber structure stores atmospheric carbon that trees absorbed during growth. Concrete and steel at this scale would emit carbon instead. The material choice determines whether the building begins its life as a carbon source or a carbon sink.

Boston's BERDO 2028 will require large buildings to meet escalating emissions targets. Conventional construction at this scale would face mandatory retrofits within the first compliance cycle. REACH meets the standard at delivery.

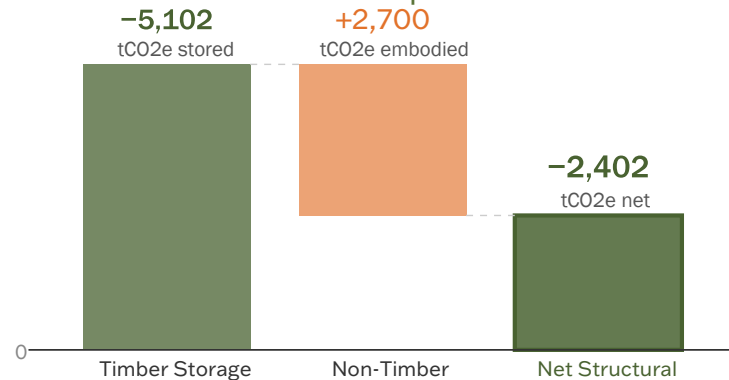
Energy/Carbon Performance

	Conventional	Passive House	PH + Solar	Improvement
Site EUI <i>kBtu/SF/yr</i>	49.2	25.0	25.0	-49%
Annual Energy <i>MWh</i>	6,479	3,292	2,681	59%
Annual Emissions <i>tCO2e/yr</i>	1,095	556	453	59%
Resident Utility Cost <i>\$/unit/yr</i>	\$2,400	\$1,200	\$1,000-\$1,200	-50 - 58%
Cost Premium <i>vs. conventional</i>	Baseline	+2.3%	+2.3%	\$3.55M

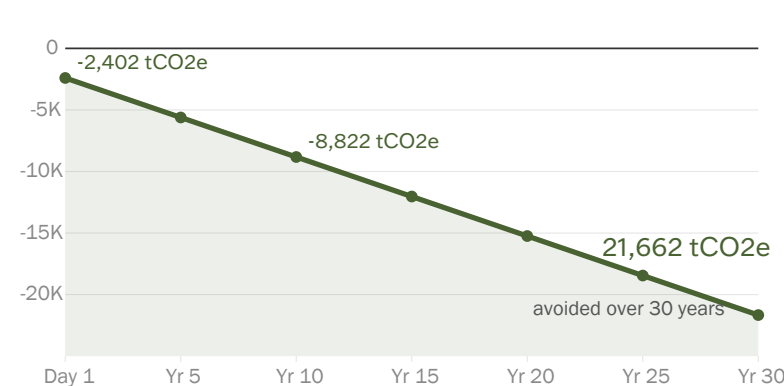
500 kW rooftop solar 611 MWh/yr generation \$110-\$135K/yr avoided cost

MassCEC Passive House Multifamily Study (2022) | NREL PVWatts v8 | BERDO 2028

Structural Carbon at Completion

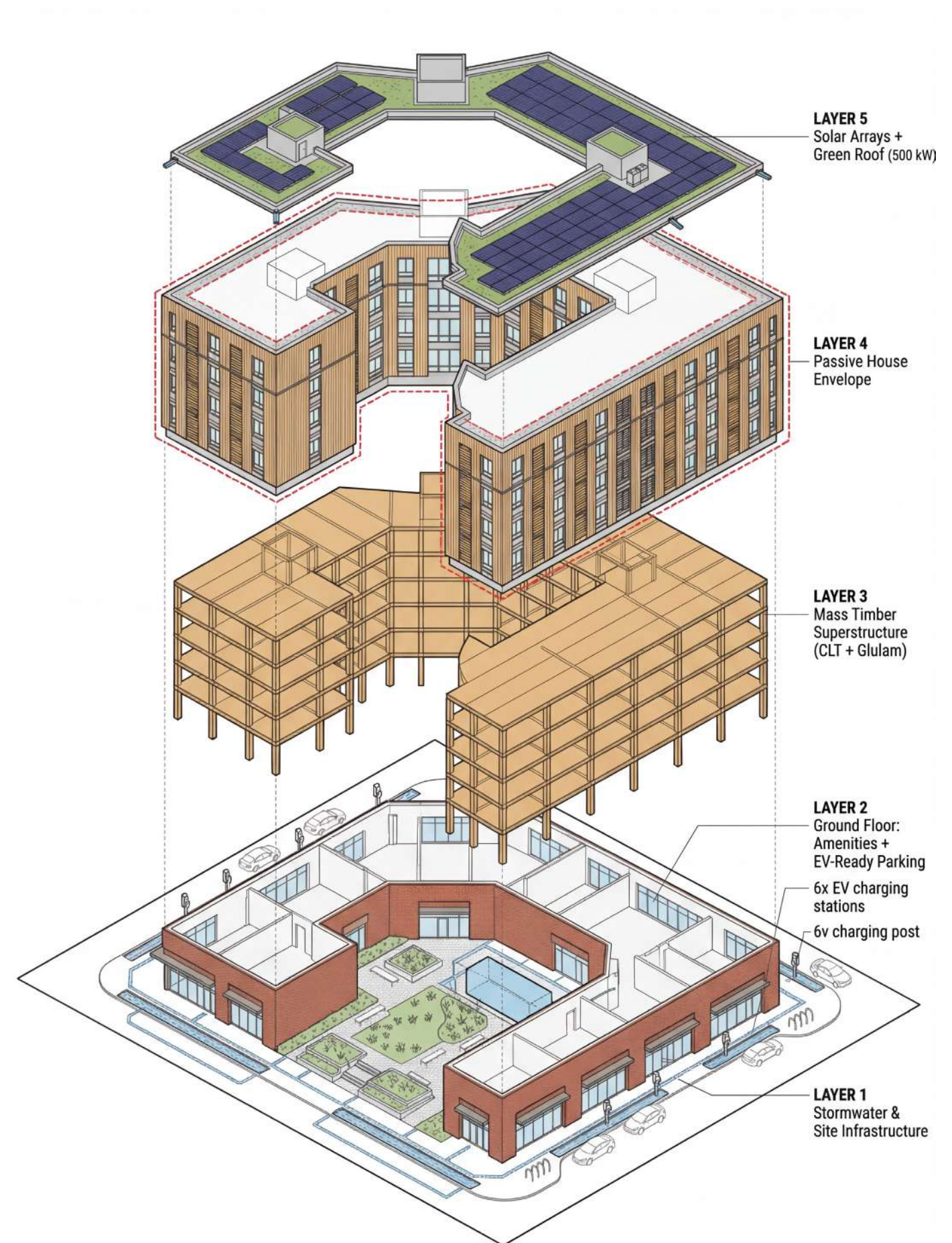


Cumulative Carbon Performance



Structural: CLT 990 in3/SF x 449,300 GSF x 700 kgCO2/m3. Operational: BERDO 2028 (169 kgCO2/MWh), PVWatts 500 kW Boston.

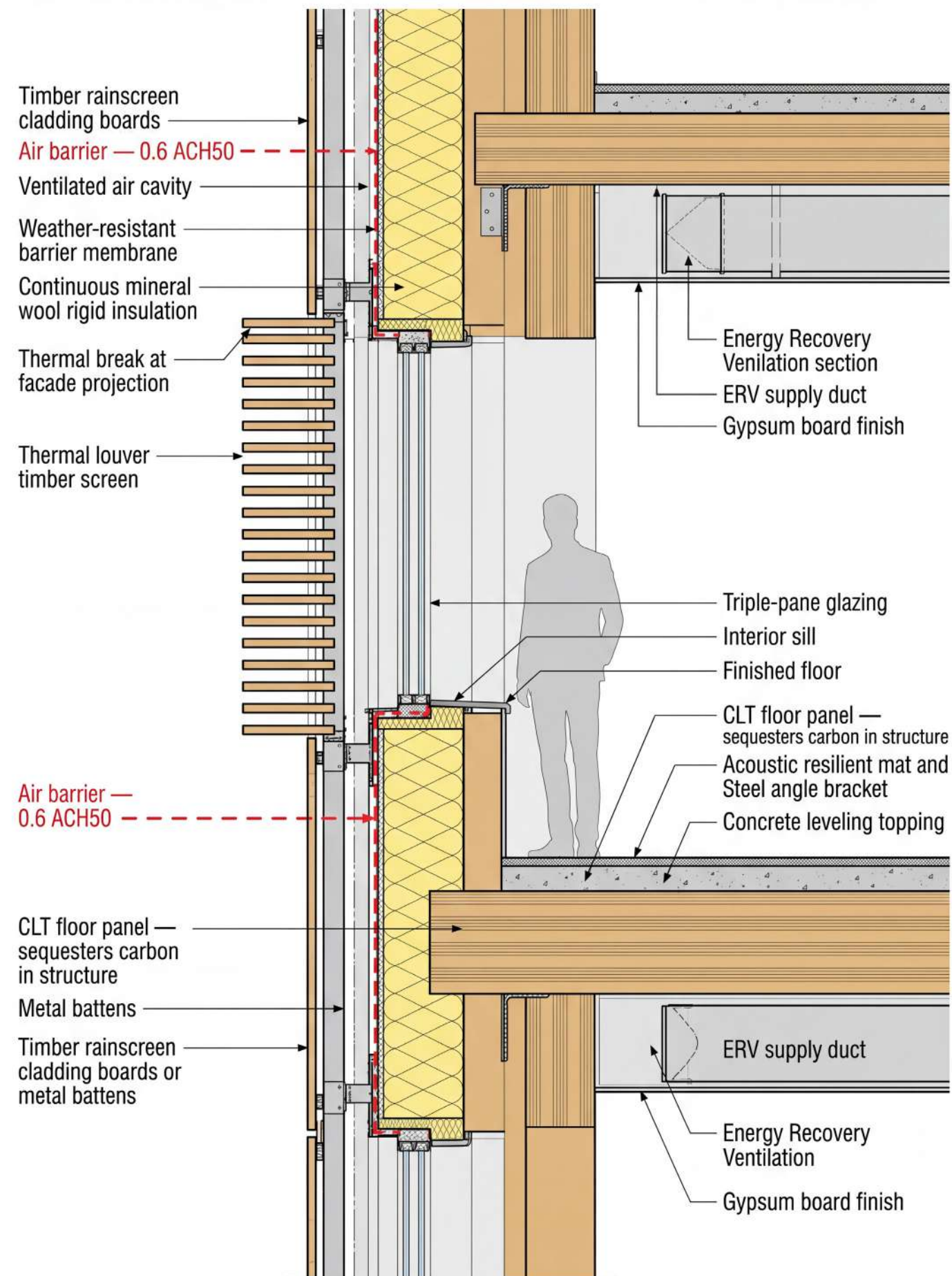
BPDA Mass Timber Accelerator (2024) | MassCEC Passive House (2022) | NREL PVWatts v8 | BERDO 2028



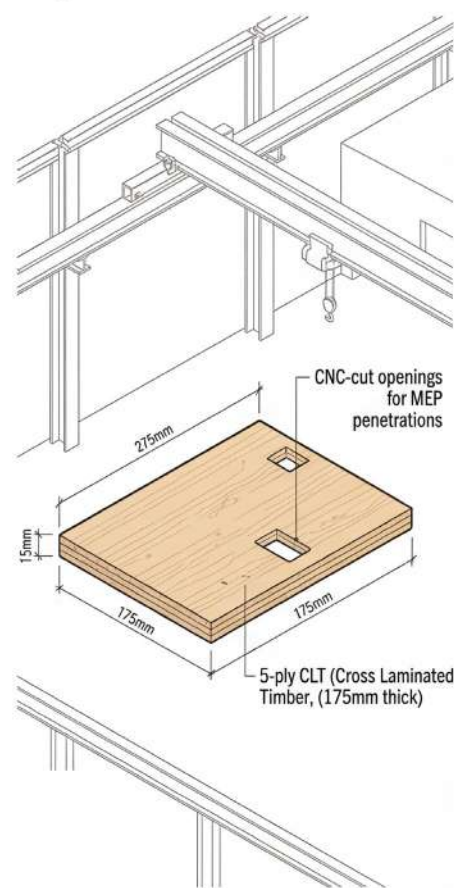
When a Three-Day Power Outage Hit Boston in February 2023, Passive House Residents Were the Only Ones Who Didn't Notice

The first thing REACH residents register is the quiet. CLT floor mass and continuous insulation eliminate neighbor noise increase housing quality compared with traditional wood-frame apartments. The second thing the notice is the stillness of the air. No drafts near windows, no cold walls, no perceptible difference between rooms. Energy recovery ventilation replaces the air continuously at 85% heat recovery, so the building breathes without residents opening a window or paying for the energy to condition what comes in.

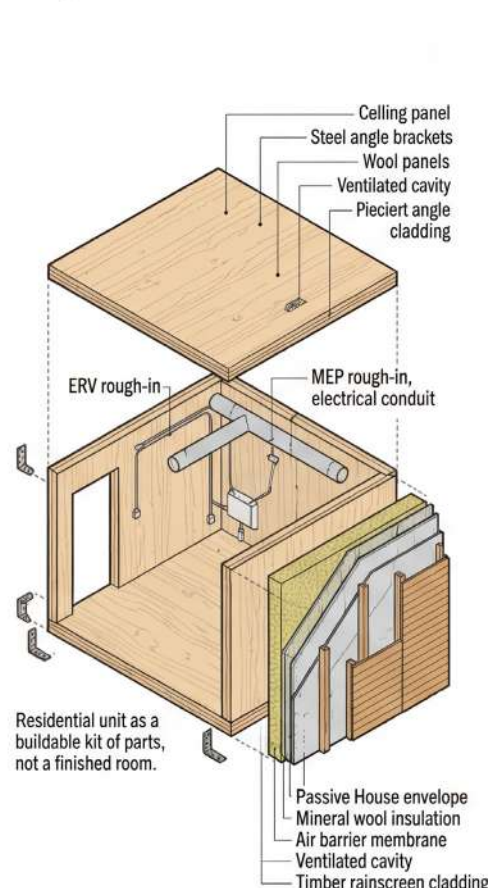
Thermal resilience may go unnoticed most of the year, but with increasing unpredictability in extreme weather due to growing climate risk, REACH Roxbury is resilient to change. The same superinsulation and mass that produce comfort in normal conditions maintain habitable temperatures for days during a grid failure, without active heating. At the same time rooftop solar maintains critical building functions and resident quality of life. The building envelope is emergency climate infrastructure that feels and looks like an apartment.



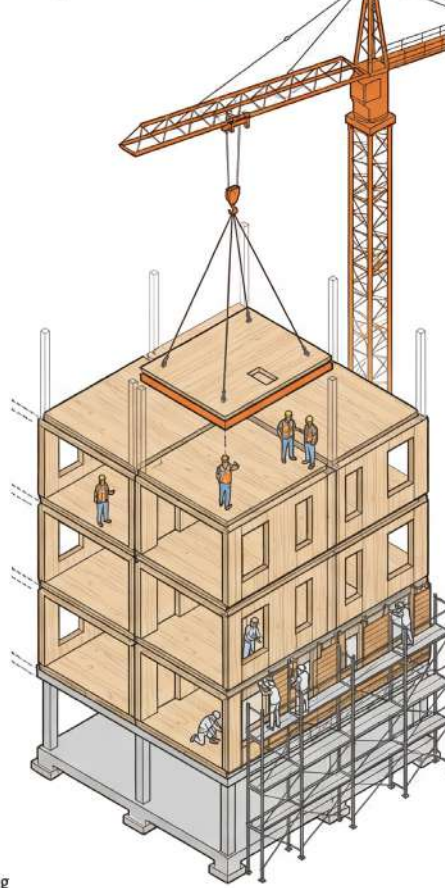
Stage 1 – THE PANEL



Stage 2 – THE MODULE



Stage 3 – THE STACK



Stage 4 – THE BUILDING



Structural Framing Is the Highest-Risk Phase of Multifamily Construction in Boston, Off-Site Cross Laminated Timber Fabrication Removes It From the Job Site

A conventional 400-unit project in Boston means open-air structural framing through at least one winter. Trades stacked on a live site. Weather delays that compound into months of additional interest carry on the construction loan. Mass timber changes the sequence. CLT panels are cut, drilled, and finished in a climate-controlled factory, then delivered to the site dimensionally precise and ready for crane placement. The structural phase compresses from months of field work to weeks of assembly.

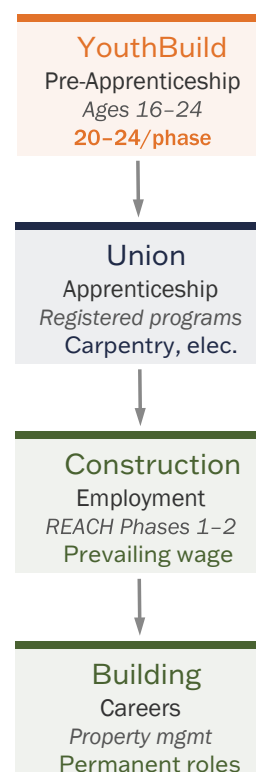
The material itself is a procurement decision. Mass timber sources from managed forests in Maine, Vermont, and Quebec rather than globally traded steel and concrete supply chains. Regional sourcing hedges against the tariff exposure and shipping volatility that have disrupted conventional construction budgets since 2021.

Factory fabrication also builds a different kind of workforce. CNC operation, digital layout, modular assembly. These are year-round, controlled-environment trades, not seasonal site work. YouthBuild apprentices learning mass timber fabrication are entering the fastest-growing structural sector in North American multifamily. The skill set has a longer time horizon than the building.

Local Hiring, Union Labor, Training Pipeline **450-550** FTE job-years (est.) **40-50** YouthBuild placements **180-220** peak on-site workers

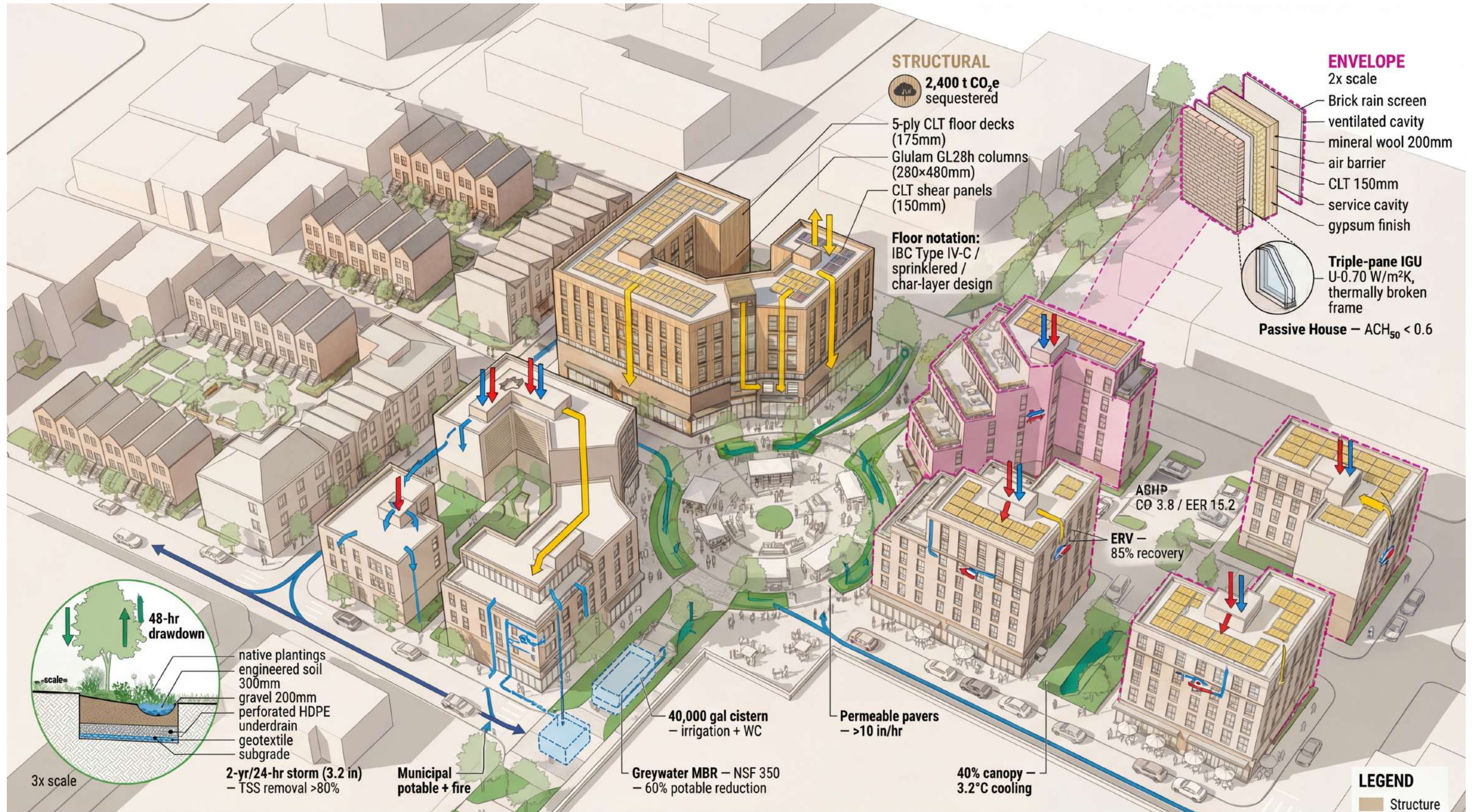
UNION / PREVAILING WAGE		~75-80% of labor hours
Foundations + podium	Concrete, structural steel, waterproofing	20-25%
Timber erection	CLT panels, glulam beams, crane ops	15-20%
MEP rough-in	Mechanical, electrical, plumbing	20-25%
Facade systems	Cladding, glazing, insulation	10-15%
Commissioning	Passive House testing, systems startup	2-3%
YOUTHBUILD / TRAINEE-ACCESSIBLE		~20-25% of labor hours
Site logistics	Material handling, staging, safety	5-7%
Weatherization	Air sealing, insulation assist	3-5%
Interior finishing	Drywall, paint, trim, flooring	5-8%
Landscaping + punch	Plantings, hardscape, final repairs	2-3%
Solar installation	Panel mounting, conduit, pre-apprentice	2-3%
Building operations	Maintenance training, systems ops	1-2%

BRJP Compliance 51% Boston residents | 40% people of color | 12% women work-hours



Principled Design

Designing for climate resilience means making strategic choices to take on upfront costs like cross laminated timber in exchange for long term benefits that ensure residents aren't forced to move again.



INTEGRATED FLOW SCHEMATIC



All systems sized to 2070 projections – NOAA Atlas 14 + RCP 8.5

LEGEND

- Structure
- Envelope
- Electrical
- HVAC
- Water
- Ecology

Building Local Capacity - Community Amenities

REACH Provides 7 Key Amenities that Respond to Roxbury's Health, Food, and Economic Indicators

Roxbury is less than 15 minutes from high-income neighborhoods like Boston's Back Bay, but its demographic indicators show a community in need of support. REACH provides key amenities that respond to community needs based on evidence.

The Community Food and Event Hall provides single aging adults and families with charitable support while bringing together community members from all economic backgrounds. The childcare center ensures that working parents have the support they need. All of this is made possible by the cooperative and CLT which let residents spend their resources on community, not land.

The Neighborhood Roxbury, Boston

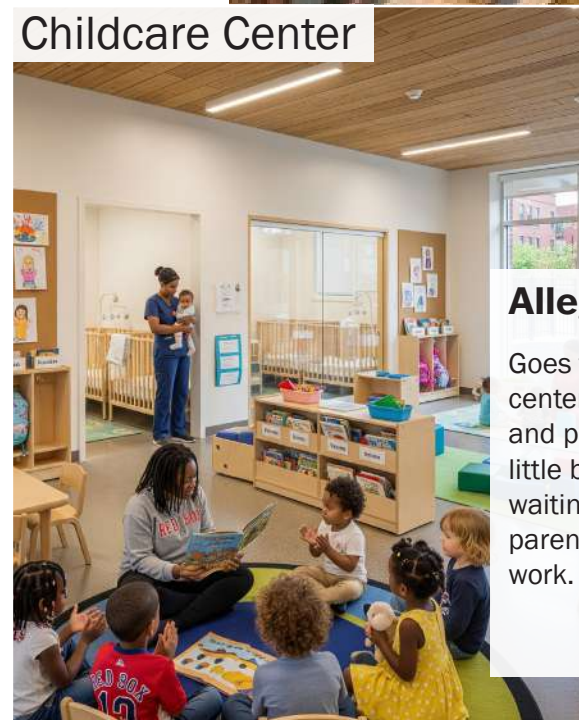
- HEALTH**
- 23-year life expectancy gap** within Boston (Roxbury ~69 vs. Back Bay ~92)
WBUR 2023, BPHC 2017-2021 Community Health Clinic
 - 9x Black asthma ED visits** vs. White (112.6 vs. 12.5 per 10K)
BPHC 2017-2021 Community Health Clinic
 - Triple HPSA designation** primary, dental, mental health shortage
HRSA Community Health Clinic
 - 2x premature mortality** vs. citywide (282.9 vs. 140.3 per 100K)
BPHC 2017-2021 Community Health Clinic
- FOOD**
- 25% food insecure** — highest in Boston
City of Boston 2021 Community Kitchen & Food Hub
 - 1 grocery store per 25,000** residents; heavy reliance on corner stores
ICIC 2022 Community Kitchen & Food Hub
- ECONOMY**
- \$32,296 median HH income** (31% of MA state median)
ACS 2019-2023 Family Resource Center
 - 10.8% unemployment** (2x city average)
ACS, Statistical Atlas Workforce Development
 - 21.5% no HS diploma** (13.1% bachelor's — 12 pts below city)
ACS Digital Equity Center
 - 88.5% free/reduced lunch** at nearest school (MA avg: 41.6%)
BPS Family Resource Center
- CLIMATE**
- 12° F+ urban heat variation** among Boston's hottest neighborhoods
EPA, BU Climate Education Center
 - EJ designated community** 51% open space deficit; 7% canopy gap
City of Boston Climate Education Center



Community Food & Event Hall

Marcus, 41

Volunteers weekly at the Community Hall to cook for REACH community dinners and local events.



Childcare Center

Allegra, 10

Goes to the childcare center after school and plays with her little brother while waiting for their parents to finish work.



Additional Amenities

- Workforce Development Center
- Health and Wellness Hub
- Youth Center & Career Support
- Digital Equity Center



Community Organizing Space

Nia, 33

Leads partnerships and strategic development at a local community organization that uses REACH's community office space to advocate for the needs of Roxbury residents.



Building Local Capacity - Social and Environmental ROI

FINANCIAL RETURN

20.15%

Conv. Investor IRR (Before-Tax)

6.15x

LP Equity Multiple (Year 15)

Year 1 NOI	\$3.35M
Stabilized DSCR	1.36x
LIHTC Investor IRR	6.84%
LIHTC EM	1.14x
Exit Cap Rate	5.25%

ENVIRONMENTAL RETURN

\$31.1M

Environ. NPV (Base, 7% discount)

30-year, discount

Avoided infrastructure	\$4.6M
Avoided annual losses	\$14.4M
Property value preserved	\$7.6M
Carbon & energy	\$4.5M

SOCIAL RETURN

\$149.8M

Rent Delta NPV (Base, 7% discount)

3.1 : 1

SROI per \$1 public investment

Wealth building NPV	\$35.8M
Municipal fiscal	\$16.2M
Health & amenity	\$9.5M
Displacement prevention	\$0.7M



Returns on Social Impact Investing are Not Just for the Developer, REACH Yields High Social and Environmental ROI for State Communities

Roughly 40% of the capital stack (\$81.6M) is public money. That money eliminates \$150M in housing costs for 280 households, removes \$45.2M in infrastructure and disaster spending the state would otherwise carry, and builds \$217M in household wealth providing equitable opportunities for vulnerable households. Private equity earns 20.2% levered IRR Public capital earns a 2.7 social return on the same project. REACH prices both in the same model.

[See appendix for methodology]



Summary

Transforming Social Impact Investing

REACH Roxbury will provide community and critical support for its 400 residents, and transform the lives of climate migrants who relocate. But the real investment is in transforming how communities respond to climate threats and piloting a framework that links social and climate impact. The REACH model is born out of Roxbury's unique history and landscape, but the Relocation for Equitable and Adaptive Climate Housing framework is scalable to any region that needs to reorganize its housing equity and protect vulnerable populations from inequitable outcomes.

Development that Rebalances Municipal Opportunity Cost

Through clear alignment with government priorities, REACH gains access to high quality capital that makes a 20.15% investor return possible. In turn, at risk coastal communities, the Roxbury receiving community, and state and federal governments share \$31.1 million in environmental returns from mitigated climate losses and improved infrastructure. Meanwhile, REACH provides a three to one return on dollars invested for social impact through cooperative wealth building, improved health outcomes, and displacement prevention.

Why This is the Time for REACH

With the increasing frequency of extreme weather events and rising costs of living in Massachusetts, low- and moderate-income homeowners are at greater risk than ever before. The state recognizes this and the Office of Coastal Zone Management projects that annual damages from coastal climate disasters will exceed one billion dollars by 2070.

The Massachusetts' State ResilientCoast Initiative calls for innovative techniques like buyouts and transfer of development rights to be used for managed retreat and the CRC model combines them into one streamlined process that enables development. REACH is a community asset to Roxbury and will become a proof of concept for communities everywhere struggling to adapt to changing climates and devastating coastal hazards.

How Creative Development Operation Guarantees that Equity Comes First

Through a new pathway for Community Land Trust development, REACH ensures that federal disaster spending is translated into community wealth. Roxbury is already home to the most successful urban CLT, Dudley Neighborhoods Incorporated, and this legacy provides critical support for REACH's climate focused CLT. When equity is placed first, resilience comes at no extra charge and vulnerable residents reach higher ground.

Linking Climate and Social Impact



Relocating Residents of High Risk Communities



Delivering High Quality, Affordable and Resilient Housing



Supporting Climate Migrants and Existing Community Members



Appendix - Proposed Development Timeline

Community Outreach

Engagement with sending and receiving communities



Developer Partnership

RFP & partner selection



Market/Affordable

200 units total, 120 market and 80 affordable



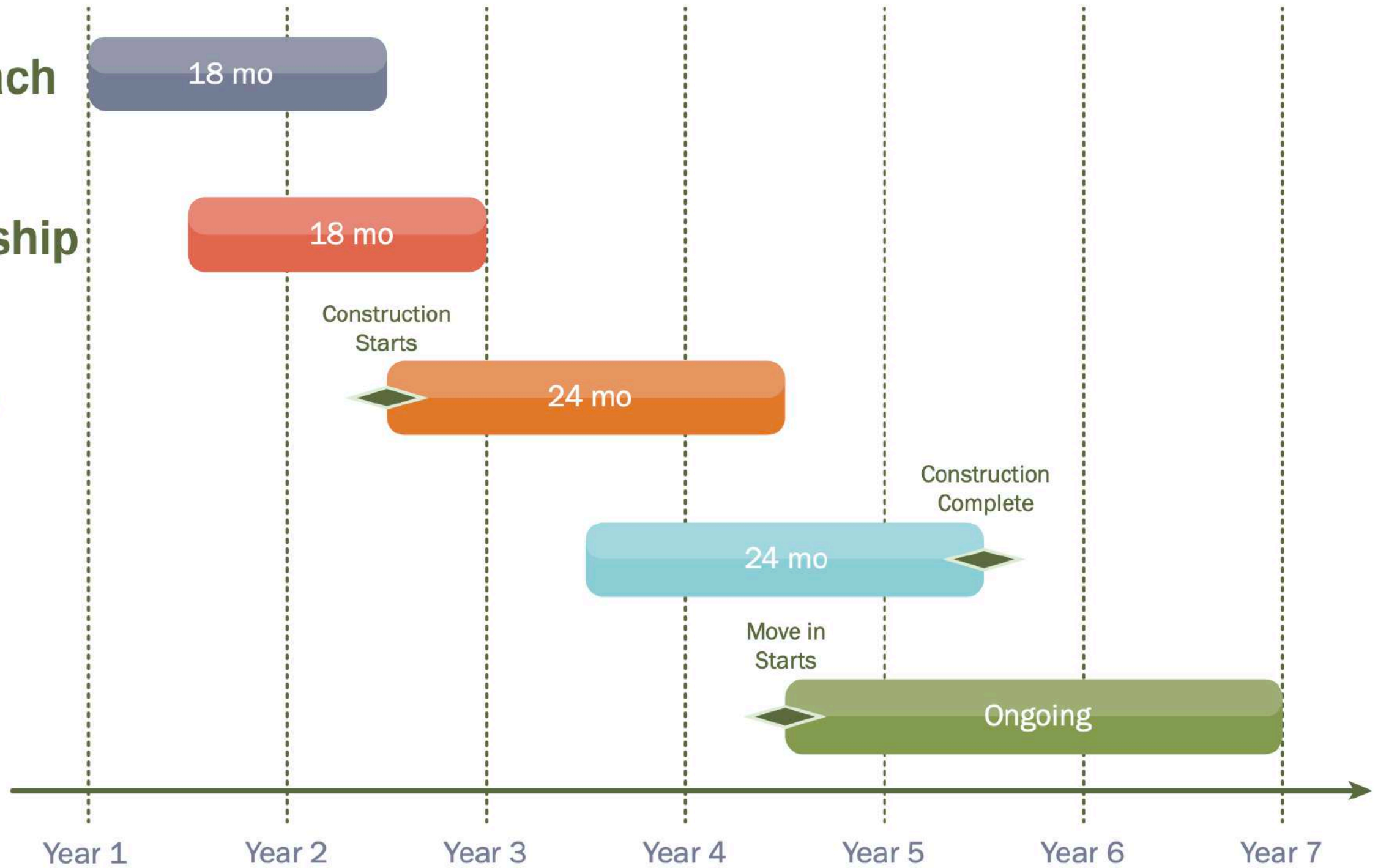
Coop Construction

200 cooperative units



Coop Operations

Full occupancy and stewardship



Appendix - Waterfall

Inputs

NOI Growth Rate (post Yr 15)	2.50%
MassHousing Soft Debt Rate (annual)	2.00%
HOME Loan Rate (annual)	0.00%
State Credits Rate (annual)	0.00%
Refi LTV	65.00%
Cap Rate Sensitivity Delta (+/-)	0.50%

Scenario	Type	Year	Cap Rate	NOI (Yr)	Value (NOI/Cap)	Txn/Refi Costs	Net Before Payoff	Senior Debt Due	Left Over	MassHousing Soft	LIHTC Buyout (buy)	Deferred Dev Fee Payoff
Refi (Base) [diagno	Refi	7	6.00%	\$4,153,919	\$69,231,983	\$900,016	\$44,100,773	\$35,169,896.55	\$8,930,877	\$18,378,971	-	\$2,468,732
Refi (Stress) [diag	Refi	7	7.00%	\$4,153,919	\$59,341,700	\$771,442	\$37,800,663	\$35,169,896.55	\$2,630,766	\$18,378,971	-	\$2,468,732
Early Sale (Base)	Sale	10	5.75%	\$4,616,275	\$80,283,048	\$1,605,661	\$78,677,387	\$32,366,510.52	\$46,310,877	\$19,503,911	\$1,500,000	-
Early Sale (Stress)	Sale	10	7.00%	\$4,616,275	\$65,946,790	\$1,318,936	\$64,627,854	\$32,366,510.52	\$32,261,343	\$19,503,911	\$1,500,000	-
Base Sale (Base)	Sale	15	5.25%	\$5,493,661	\$104,641,155	\$2,092,823	\$102,548,332	\$26,767,101.09	\$75,781,231	\$21,533,893	\$1,500,000	-
Base Sale (Stress)	Sale	15	7.00%	\$5,493,661	\$78,480,866	\$1,569,617	\$76,911,249	\$26,767,101.09	\$50,144,148	\$21,533,893	\$1,500,000	-

B. 15-YEAR WATERFALL PROJECTION (4-Tier Promote)

Tier 1: Return OF Capital (100% to LP until capital returned)
 Tier 2: 8% Cumulative Compounding Preferred (100% to LP until achieved)
 Tier 3: GP Catch-up (100% to GP until GP receives 20% of Tiers 1+2)
 Tier 4: Residual Split (80% LP / 20% GP)

Net to Promote W	Tier1: Return of C	Tier2: Pref (LP)	Tier3: GP Catch-up	Tier4: Residual (LP)	Tier4: Residual (GP)	Total Exit Proceed	Total Exit Proceeds (GP)
\$8,930,877	\$1,287,561	\$7,138,243	\$505,073	-	-	\$8,425,804	\$505,073
\$2,630,766	\$1,287,561	\$1,343,205	-	-	-	\$2,630,766	-
\$21,306,966	-	\$11,589,250	\$2,897,312	\$5,456,323	\$1,364,081	\$17,045,573	\$4,261,393
\$7,257,432	-	\$7,257,432	-	-	-	\$7,257,432	-
\$48,747,338	-	\$12,349,755	\$3,107,565	\$26,632,014	\$6,658,004	\$38,981,769	\$9,765,569
\$23,110,255	-	\$12,349,755	\$3,107,565	\$6,122,348	\$1,530,587	\$18,472,103	\$4,638,152

INVESTOR WATERFALL & IRR ANALYSIS

Year	NOI	Debt Svc	Def Fee PAID	Def Fee ACCR	AM Fee	Other Expenses	Distrib Cash	Tier1 ROC	Tier2 Pref	Tier3 Catchup	Tier4 LP (80%)	Tier4 GP (20%)	Total LP	Total GP	Cum Cap Ret	Pref Accrual	Cum Distrib	Avail for WF
1	\$3,353,614	\$2,457,198	\$352,676	-\$2,116,056	\$150,000	\$1,913,380	\$4,818,591	\$4,818,591	\$0	\$0	\$0	\$0	\$4,818,591	\$0	\$4,818,591	\$0	4818591.486	4818591.49
2	\$3,476,423	\$2,457,198	\$352,676	-\$1,763,380	\$150,000	\$1,560,704	\$516,548	\$516,548	\$0	\$0	\$0	\$0	\$516,548	\$0	\$5,335,140	\$0	5335139.881	516548.395
3	\$3,603,283	\$2,457,198	\$352,676	-\$1,410,704	\$150,000	\$1,208,028	\$643,409	\$643,409	\$0	\$0	\$0	\$0	\$643,409	\$0	\$5,978,548	\$0	5978548.456	643408.575
4	\$3,734,326	\$2,457,198	\$352,676	-\$1,058,028	\$150,000	\$855,352	\$774,451	\$774,451	\$0	\$0	\$0	\$0	\$774,451	\$0	\$6,753,000	\$0	6752999.705	774451.249
5	\$3,869,686	\$2,457,198	\$352,676	-\$705,352	\$150,000	\$502,676	\$909,811	\$909,811	\$0	\$0	\$0	\$0	\$909,811	\$0	\$7,662,811	\$0	7662811.012	909811.307
6	\$4,009,502	\$2,457,198	\$352,676	-\$352,676	\$150,000	\$150,000	\$1,049,628	\$1,049,628	\$0	\$0	\$0	\$0	\$1,049,628	\$0	\$8,712,439	\$0	8712438.936	1049627.92
7	\$4,153,919	\$2,457,198	\$352,676	\$0	\$150,000	-\$202,676	\$1,194,045	\$1,194,045	\$0	\$0	\$0	\$0	\$1,194,045	\$0	\$9,906,484	\$0	9906483.626	1194044.69
8	\$4,303,084	\$2,457,198	\$0	\$0	\$150,000	\$150,000	\$1,695,886	\$93,516	\$0	\$1,602,369	\$0	\$0	\$93,516	\$1,602,369	\$10,000,000	\$0	11602369.34	1695885.71
9	\$4,457,150	\$2,457,198	\$0	\$0	\$150,000	\$150,000	\$1,849,952	\$0	\$0	\$897,631	\$761,857	\$190,464	\$761,857	\$1,088,095	\$10,000,000	\$0	13452321.25	1849951.91
10	\$4,616,275	\$2,457,198	\$0	\$0	\$150,000	\$150,000	\$2,009,077	\$0	\$1,589,250	\$397,312	\$18,012	\$4,503	\$1,607,262	\$401,815	\$10,000,000	\$0	15461398.2	2009076.94
11	\$4,780,622	\$2,457,198	\$0	\$0	\$150,000	\$150,000	\$2,173,423	\$0	\$1,727,140	\$431,785	\$11,599	\$2,900	\$1,738,739	\$434,685	\$10,000,000	\$0	17634821.69	2173423.49
12	\$4,950,358	\$2,457,198	\$0	\$0	\$150,000	\$150,000	\$2,343,159	\$0	\$1,865,311	\$466,328	\$9,216	\$2,304	\$1,874,528	\$468,632	\$10,000,000	\$0	19977981.07	2343159.38
13	\$5,125,656	\$2,457,198	\$0	\$0	\$150,000	\$150,000	\$2,518,458	\$0	\$2,014,536	\$503,634	\$230	\$58	\$2,014,766	\$503,692	\$10,000,000	\$0	22496438.86	2518457.79
14	\$5,306,696	\$2,457,198	\$0	\$0	\$150,000	\$150,000	\$2,699,497	\$0	\$2,175,699	\$523,798	\$0	\$0	\$2,175,699	\$523,798	\$10,000,000	\$0	25195936.2	2699497.34
15	\$5,493,661	\$2,457,198	\$0	\$0	\$150,000	\$150,000	\$2,886,462	\$0	\$2,349,755	\$536,707	\$0	\$0	\$2,349,755	\$536,707	\$10,000,000	\$0	28082398.52	2886462.32
TOTAL	\$65,234,254	\$36,857,975	\$2,468,732	-\$7,406,195	\$2,250,000	\$7,187,463	\$28,082,399	\$10,000,000	\$11,721,691	\$5,359,565	\$800,914	\$200,228	\$22,522,605	\$5,559,794				

C. IRR CALCULATIONS BY INVESTOR CLASS

LIHTC INVESTOR (After-Tax) — 4% Credits + Tax-Exempt Bonds

CONVENTIONAL INVESTOR (Before-Tax)

Developer Total Cash

Year	Tax Credits	Tax Losses	Cash Flow	Exit	Total Value	Cumulative	Equity Multiple	Year	Distributions	Exit Proceeds	Total CF	Cumulative	Equity Multiple	Year	Dev Fee	AM Fees	GP Promote	Total CF
0	\$0	\$0	-\$14,634,927	\$0	-\$14,634,927			0	\$0	-\$10,000,000	-\$10,000,000			0	\$6,171,829	\$0	\$0	\$6,171,829
1	\$1,721,756	\$733,876	\$532	\$0	\$2,456,164	\$2,456,164	0.17	1	\$4,818,591	\$0	\$4,818,591	4818591.49	0.48	1	\$0	-\$2,116,056	\$0	\$2,116,056
2	\$1,721,756	\$733,876	\$102	\$0	\$2,455,734	\$4,911,898	0.34	2	\$516,548	\$0	\$516,548	\$5,335,140	0.53	2	\$352,676	-\$1,763,380	\$0	\$1,410,704
3	\$1,721,756	\$733,876	\$115	\$0	\$2,455,747	\$7,367,645	0.50	3	\$643,409	\$0	\$643,409	\$5,978,548	0.60	3	\$352,676	-\$1,410,704	\$0	\$1,058,028
4	\$1,721,756	\$733,876	\$128	\$0	\$2,455,760	\$9,823,404	0.67	4	\$774,451	\$0	\$774,451	\$6,753,000	0.68	4	\$352,676	-\$1,058,028	\$0	\$705,352
5	\$1,721,756	\$733,876	\$141	\$0	\$2,455,773	\$12,279,177	0.84	5	\$909,811	\$0	\$909,811	\$7,662,811	0.77	5	\$352,676	-\$705,352	\$0	\$352,676
6	\$1,721,756	\$733,876	\$155	\$0	\$2,455,787	\$14,734,965	1.01	6	\$1,049,628	\$0	\$1,049,628	\$8,712,439	0.87	6	\$352,676	-\$352,676	\$0	\$0
7	\$1,721,756	\$733,876	\$170	\$0	\$2,455,802	\$17,190,766	1.17	7	\$1,194,045	\$0	\$1,194,045	\$9,906,484	0.99	7	\$352,676	\$0	\$0	-\$352,676
8	\$1,721,756	\$733,876	\$185	\$0	\$2,455,817	\$19,646,583	1.34	8	\$93,516	\$0	\$93,516	\$10,000,000	1.00	8	\$0	\$0	\$1,602,369	\$1,602,369
9	\$1,721,756	\$733,876	\$200	\$0	\$2,455,832	\$22,102,415	1.51	9	\$761,857	\$0	\$761,857	\$10,761,857	1.08	9	\$0	\$0	\$1,088,095	\$1,088,095
10	\$1,721,756	\$733,876	\$216	\$0	\$2,455,848	\$24,558,263	1.68	10	\$1,607,262	\$0	\$1,607,262	\$12,369,119	1.24	10	\$0	\$0	\$401,815	\$401,815
11	\$0	\$733,876	\$232	\$0	\$734,108	\$25,292,371	1.73	11	\$1,738,739	\$0	\$1,738,739	\$14,107,857	1.41	11	\$0	\$0	\$434,685	\$434,685
12	\$0	\$733,876	\$249	\$0	\$734,125	\$26,026,496	1.78	12	\$1,874,528	\$0	\$1,874,528	\$15,982,385	1.60	12	\$0	\$0	\$468,632	\$468,632
13	\$0	\$733,876	\$267	\$0	\$734,143	\$26,760,639	1.83	13	\$2,014,766	\$0	\$2,014,766	\$17,997,151	1.80	13	\$0	\$0	\$503,692	\$503,692
14	\$0	\$733,876	\$285	\$0	\$734,161	\$27,494,799	1.88	14	\$2,175,699	\$0	\$2,175,699	\$20,172,850	2.02	14	\$0	\$0	\$523,798	\$523,798
15	\$0	\$733,876	\$304	-\$11,606,236	-\$10,872,056	\$16,622,743	1.14	15	\$2,349,755	\$38,981,769	\$41,331,524	\$61,504,374	6.15	15	\$0	\$0	\$536,707	\$9,765,569
					6.84%	(\$854,354.25)	NPV @sale				20.15%	\$6,156,167.48	NPV @sale		Developer/Spons (No capital invested - infinite return)			\$26,250,623

Appendix - Carrying Charges

CARRYING CHARGES - SF-WEIGHTED EQUITY-ADJUSTED MODEL

SF-WEIGHTED EQUITY-ADJUSTED FORMULA

Unit Charge = (Total OpEx + DS) × (Unit SF / Total SF) × (1 - Equity%)

Larger units pay proportionally more. Higher equity = lower monthly charges.

SECTION 1: TOTAL ANNUAL COST

Component	Annual Amount	Source
Total Coop Operating Expenses	\$1,717,000	From Assumptions sheet
Total Coop Debt Service	\$1,642,775	Bonds + Notes (PMT formulas)
Debt Service as Percentage	96%	Bonds + Notes (PMT formulas)
TOTAL ANNUAL COST (OpEx + DS)	\$3,359,775	OpEx + DS (exact cost recovery)

SECTION 2: TOTAL SQUARE FOOTAGE

Component	Square Feet	Calculation
Total Coop SF (all 200 units)	200,750	Sum of all Coop unit SF

SECTION 3: EQUITY COVERAGE BY MEMBER TYPE

Member Type	Equity	Unit Price	Coverage %	Capital Share %
Migrant	\$400,000	\$460,000	86.96%	13.04%
Roxbury	\$30,000	\$460,000	6.52%	93.48%

SECTION 4: MONTHLY CARRYING CHARGES BY UNIT TYPE (Power-Curve Equity Model, p=0.5)

Weight = (1 - EquityCoverage)^{0.4}. Higher equity = lower charge, curved to avoid extremes.

Unit Type	Unit SF	Base Carrying Charge	Debt Service/Unit	Equity Discount (Annual)	Migrant Charge	Units	Sum	Roxbury Charge	Units	Sum	Market Rent	Units
1BR Small	725	\$1,011.14	\$5,932.81	\$10,551.03	\$550	15	\$8,249.58	\$1,472	15	\$22,084.63	\$2,800	30
1BR Large	800	\$1,115.74	\$6,546.55	\$11,642.52	\$607	15	\$9,102.98	\$1,625	15	\$24,369.25	\$3,200	30
2BR Standard	1,000	\$1,394.68	\$8,183.19	\$14,553.14	\$759	25	\$18,964.54	\$2,031	25	\$50,769.28	\$3,200	50
2BR Large	1,100	\$1,534.14	\$9,001.51	\$16,008.46	\$834	25	\$20,861.00	\$2,234	25	\$55,846.20	\$3,600	50
3BR	1,250	\$1,743.35	\$10,228.99	\$18,191.43	\$948	20	\$18,964.54	\$2,538	20	\$50,769.28	\$3,800	40

SECTION 5: VALIDATION - REVENUE BALANCE

Total carrying charge revenue MUST equal Total Annual Cost (OpEx + DS)

Component	Amount	Source
Total Migrant Carrying Charges	\$913,712	100 migrant units × charges × 12 mo
Total Roxbury Carrying Charges	\$2,446,064	100 Roxbury units × charges × 12 mo
TOTAL REVENUE (from charges)	\$3,359,775	Should = Total Annual Cost
TOTAL ANNUAL COST (from Section 1)	\$3,359,775	OpEx + DS
BALANCE CHECK (Revenue - Cost)	\$0	MUST BE \$0

SECTION 6: EQUITY EFFECT - Roxbury vs Migrant Comparison

Migrants (87% equity) pay less via curved discount; Roxbury (7% equity) pays more but well below market

Power curve (p=0.5) compresses the ratio vs. linear equity-proportional model

Unit Type	Migrant	Roxbury	Roxbury/Migrant Ratio
1BR Small	\$550	\$1,472	2.68
1BR Large	\$607	\$1,625	2.68
2BR Standard	\$759	\$2,031	2.68
2BR Large	\$834	\$2,234	2.68
3BR	\$948	\$2,538	2.68



Appendix - Lease Up

PHASE 1 LEASE-UP PERIOD (MONTHS 19-24)

200 Market-Rate & Affordable Units

OCCUPANCY RAMP (S-CURVE MODEL)

Metric	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Year 1 Total
Occupancy %	10.00%	25.00%	50.00%	75.00%	90.00%	100.00%	58.33%
Occupied Units	20	50	100	150	180	200	116.7

REVENUE (PROPORTIONAL FILL)

Market Studio	\$4,800	\$12,000	\$24,000	\$36,000	\$43,200	\$48,000	\$168,000
Market 1BR Small	\$7,000	\$17,500	\$35,000	\$52,500	\$63,000	\$70,000	\$245,000
Market 1BR Large	\$8,000	\$20,000	\$40,000	\$60,000	\$72,000	\$80,000	\$280,000
Market 2BR Standard	\$8,000	\$20,000	\$40,000	\$60,000	\$72,000	\$80,000	\$280,000
Market 2BR Large	\$5,400	\$13,500	\$27,000	\$40,500	\$48,600	\$54,000	\$189,000
Market 3BR	\$3,800	\$9,500	\$19,000	\$28,500	\$34,200	\$38,000	\$133,000
Affordable Studio	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Affordable 1BR	\$4,200	\$10,500	\$21,000	\$31,500	\$37,800	\$42,000	\$147,000
Affordable 2BR	\$5,775	\$14,438	\$28,875	\$43,313	\$51,975	\$57,750	\$202,125
Affordable 3BR	\$2,820	\$7,050	\$14,100	\$21,150	\$25,380	\$28,200	\$98,700
Retail Rent	\$51,250	\$51,250	\$51,250	\$51,250	\$51,250	\$51,250	\$307,500
Parking Income	\$750	\$1,875	\$3,750	\$5,625	\$6,750	\$7,500	\$26,250
Laundry/Storage	\$250	\$625	\$1,250	\$1,875	\$2,250	\$2,500	\$8,750
Gross Potential Revenue	\$102,045	\$178,238	\$305,225	\$432,213	\$508,405	\$559,200	\$2,085,325
Less: Vacancy	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Effective Gross Income	\$102,045	\$178,238	\$305,225	\$432,213	\$508,405	\$559,200	\$2,085,325

OPERATING EXPENSES (PHASED WITH OCCUPANCY)

Property Management	\$5,102	\$8,912	\$15,261	\$21,611	\$25,420	\$27,960	\$104,266
Maintenance	\$60,000	\$150,000	\$300,000	\$450,000	\$540,000	\$600,000	\$2,100,000
Utilities (Common Areas)	\$48,000	\$120,000	\$240,000	\$360,000	\$432,000	\$480,000	\$1,680,000
Insurance	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$180,000
Real Estate Taxes	\$90,000	\$90,000	\$90,000	\$90,000	\$90,000	\$90,000	\$540,000
Administrative	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$60,000
Marketing	\$8,333	\$8,333	\$8,333	\$8,333	\$8,333	\$8,333	\$50,000
Security	\$8,333	\$8,333	\$8,333	\$8,333	\$8,333	\$8,333	\$50,000
Grounds/Landscaping	\$8,333	\$8,333	\$8,333	\$8,333	\$8,333	\$8,333	\$50,000
Replacement Reserve	\$15,000	\$37,500	\$75,000	\$112,500	\$135,000	\$150,000	\$525,000
Operating Reserve	\$8,333	\$8,333	\$8,333	\$8,333	\$8,333	\$8,333	\$50,000
Total Operating Expenses	\$291,436	\$479,745	\$793,595	\$1,107,444	\$1,295,754	\$1,421,293	\$5,389,266

NET OPERATING INCOME

Net Operating Income (NOI)	-\$189,391	-\$301,508	-\$488,370	-\$675,231	-\$787,349	-\$862,093	-\$3,303,941
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DEBT SERVICE (N/A — CONSTRUCTION PERIOD, INTEREST IN S&U)

Permanent Loan Payment	\$0	\$0	\$0	\$0	\$0	\$0	\$0
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CASH FLOW

Cash Flow Before Tax	-\$189,391	-\$301,508	-\$488,370	-\$675,231	-\$787,349	-\$862,093	-\$3,303,941
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Appendix - Rent Roll

RENT ROLL & CONSTRUCTION MODEL

PROJECT COST ASSUMPTIONS

Total Development Cost (TDC)	202341886.4
Retail Build-Out Cost	8250000
Community / Amenity Build-Out Cost	13140000
Total Residential Units	400
Total Retail SF	15000
Total Amenity SF	29200
GFA	421950
Residential Allocable Cost	\$180,951,886
Residential Sqft	377750
Residential Cost/Sqft (total)	\$479.03

B. MARKET-RATE UNIT MIX (120 Units)

Unit Type	Count	Net SF	Gross SF	Total Sf	Monthly Rent	Monthly Total	Annual Revenue	Total GSF	Total Cost
Studio	20	475	550	11000	\$2,400.00	\$48,000.00	\$576,000.00	11000	\$5,269,280.61
1BR Small	25	625	725	18125	\$2,800.00	\$70,000.00	\$840,000.00	18125	\$8,682,337.37
1BR Large	25	700	800	20000	\$3,200.00	\$80,000.00	\$960,000.00	20000	\$9,580,510.20
2BR Standard	25	875	1000	25000	\$3,200.00	\$80,000.00	\$960,000.00	25000	\$11,975,637.75
2BR Large	15	950	1100	16500	\$3,600.00	\$54,000.00	\$648,000.00	16500	\$7,903,920.91
3BR	10	1100	1250	12500	\$3,800.00	\$38,000.00	\$456,000.00	12500	\$5,987,818.87
Sum	120	4725	5425	103125	\$19,000.00	\$370,000.00	\$4,440,000.00	103125	\$49,399,505.71

C. AFFORDABLE UNIT MIX (80 Units @ 60% AMI)

Unit Type	Count	Net SF	Gross SF	Total Sf	Monthly Rent	Monthly Total	Annual Revenue	Total GSF	Total Cost
1BR	30	625	725	21750	\$1,400.00	\$42,000.00	\$504,000.00	21750	\$10,418,804.84
2BR	35	850	975	34125	\$1,650.00	\$57,750.00	\$693,000.00	34125	\$16,346,745.53
3BR	15	1050	1200	18000	\$1,880.00	\$28,200.00	\$338,400.00	18000	\$8,622,459.18
Sum	80	2525	2900	73875	\$4,930.00	\$127,950.00	\$1,535,400.00	73875	\$35,388,009.55

D. COOPERATIVE UNIT MIX (200 Units)

Unit Type	Count	Net SF	Gross SF	Total Sf	Total GSF	Total Cost
1BR Small	30	625	725	21750	21750	\$10,418,804.84
1BR Large	30	700	800	24000	24000	\$11,496,612.24
2BR Standard	50	875	1000	50000	50000	\$23,951,275.50
2BR Large	50	950	1100	55000	55000	\$26,346,403.05
3BR	40	1100	1250	50000	50000	\$23,951,275.50
Sum	200	4250	4875	200750	200750	\$96,164,371.12

F. RESIDENTIAL CONSTRUCTION COST SUMMARY

Program	Total Units	Total GSF	Total Cost	Cost / Unit
Market-Rate	120	103125	\$49,399,505.71	\$411,662.55
Affordable	80	73875	\$35,388,009.55	\$442,350.12
Cooperative	200	200750	\$96,164,371.12	\$480,821.86
TOTAL RESIDENTIAL	400	377750	\$180,951,886.37	\$444,944.84



Appendix - Source Details

SOURCE DETAILS & COMPLIANCE REFERENCE

SECTION 1: SOURCE-BY-SOURCE DETAIL

Source	Amount	Administrator	Rate	Term	Type	Compliance Requirements	Timing	Notes
DEVELOPMENT PARTNERSHIP SOURCES								
4% LIHTC Equity	14,634,927	As-of-right with tax-exempt bond financing	85.00%	10-yr credit period	Investor Equity	30+yr affordability, 60% AMI avg, annual monitoring	Construction period	80 affordable units eligible. LP investment. 4% as-of-right (not competitive 9%). OBBBA 2025: 25% bond threshold.
Conventional Investor Equity	10,000,000	Private impact/ESG investors	8.00%	15 years	Investor Equity	Market-rate investor return requirements	Construction period	8% cumulative compounding preference + participation rights. AHIC standard.
State Housing Credits (HDIP)	10,000,000	MA DOR / EOHLIC	\$0.9/credit	5-yr claim	State Tax Credits	Paired with 4% LIHTC, state affordability	Construction period	MA HDIP. \$60M annual aggregate + \$5M preservation (mass.gov). Claimed over 5 years.
HOME Loan	4,000,000	City of Boston DND / HUD	0%	40 years	Soft Debt	Affordable housing requirements, 25% local match	Construction close	City HOME funds for affordable units. Subordinate deferred debt.
MassHousing Soft Debt	16,000,000	MassHousing	0-2% sliding	40yr deferred	Soft Debt	State affordability requirements	Construction close	MassHousing Workforce Housing: up to \$100K/unit. FY24: \$29.9M disbursed.
FEMA BRIC Grant	3,000,000	FEMA	N/A	N/A	Grant	Flood resilience standards, federal environmental review	Pre-construction	Building Resilient Infrastructure & Communities (BRIC). Reinstated Dec 2025, ~\$1B available.
AHTF	4,000,000	MA EOHLIC	Varies	Varies	Grant/Soft Debt	State affordability, income limits	Construction period	MA Affordable Housing Trust Fund. \$800M reauthorized under Affordable Homes Act 2024. Typical \$3-5M.
HSF	2,000,000	MA EOHLIC	Varies	Varies	Grant/Soft Debt	State housing requirements	Construction period	Housing Stabilization Fund. EOHLIC-administered. Typical \$1-2M for large multifamily.
FHLBank Boston AHP	750,000	FHLBank Boston	N/A	N/A	Grant	Affordability, member bank sponsorship	Construction period	Standard in virtually every MA LIHTC stack. ~\$15M/yr New England. CLT + deep affordability score well.
National Housing Trust Fund	1,500,000	MA EOHLIC / HUD	0%	30-40yr deferred	Soft Debt	Exclusively ≤30% AMI, 30-yr affordability	Construction period	Federal NHTF via MA EOHLIC. ~\$10M/yr to MA. 0% deferred 30-40yr.
MassWorks Infrastructure	2,000,000	MassDevelopment	N/A	N/A	Grant	Infrastructure + economic development standards	Pre-construction	Largest flexible MA infrastructure grant. \$100M/yr pool. Site work + climate infrastructure eligible.
Mass Save Passive House	1,700,000	Mass Save / MassCEC	N/A	N/A	Incentive	Passive House certification required	Post-certification	Up to \$4,250/unit for PH certification. Non-competitive, enrollment-based.
Tax-Exempt Bonds (Permanent)	40,412,959	MassHousing	4.50%	30	Permanent Debt	Bond regulatory agreement, first mortgage position	Permanent conversion	MassHousing tax-exempt bonds. Sized as residual plug so Sources = Uses.
COOPERATIVE SOURCES								
Migrant Household Equity (CRC)	40,000,000	Federal (proposed CRC program)	N/A	Perpetual	Member Equity	Relocation from FEMA-designated high-risk area	Coop formation	Climate Relocation Credits. 40% immediate + 60% contingent on relocation. 100 units @ \$400K.
Roxbury Resident Equity	3,000,000	Local residents / down payment programs	N/A	Perpetual	Member Equity	Anti-displacement, community residency preference	Coop formation	MassHousing ONE, SoftSecond, sweat equity. 100 units @ \$30K.
Tax-Exempt Housing Bonds (Coop)	20,000,000	MassHousing	4.50%	30	Debt	Bond regulatory agreement	Coop formation	Tax-exempt status provides below-market rate. Secured by cooperative building (200 units).
Community Investment Notes	9,000,000	Impact investors / Calvert model	2.50%	30	Debt	Community benefit covenant	Coop formation	Below-market mission-aligned debt. Subordinate to bonds. Calvert Impact Capital model.
TIF Capital Allocation	10,000,000	City of Boston / BPDA	N/A	20	Subsidy	Development agreement, City Council approval	Pre-formation	Tax Increment Financing. MassDevelopment DIF. Revenue estimate \$16-25M at \$80-120M assessed value.
Philanthropic Grants (Coop)	12,000,000	Foundations / PRIs	N/A	Non-repayable	Philanthropy	Community benefit	Pre-formation	Barr \$5M PRI, Kresge \$2-5M PRI, Ford MRI, TBF ETOD. Supports cooperative formation.

SECTION 2: CROSS-SOURCE COMPLIANCE MATRIX

Requirement	4% LIHTC	Tax-Exempt Bonds	HOME	MassHousing	State Credits	FEMA BRIC	AHTF	HSF	NHTF	TIF	CRC
Income Limit	60% AMI avg	Per bond terms	50-80% AMI	Per program	Per LIHTC	N/A (resilience)	≤80% AMI	≤80% AMI	≤30% AMI	Per agreement	Migration only
Rent/Charge Limit	30% of limit	Per bond terms	HUD fair market	Per program	Per LIHTC	N/A	30% of income	30% of income	30% of income	Per agreement	Use-value
Affordability Term	30+ years	30+ years	20-40 years	40yr deferred	Per LIHTC	N/A	30+ years	30+ years	30+ years	20-25 years	Perpetual (CLT)
Monitoring	Annual	Annual	Annual	Annual	Annual	Periodic	Annual	Annual	Annual	Per agreement	Quarterly
Audit Required	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Varies	Yes
Wage Requirements	MA prevailing	MA prevailing	Davis-Bacon	MA prevailing	MA prevailing	Federal	MA prevailing	MA prevailing	Davis-Bacon	MA prevailing	Federal
Fair Housing	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Environmental	Phase I min	Phase I min	HUD NEPA	State	State	Federal NEPA	State	State	HUD NEPA	State	Federal review
Reporting	Quarterly	Semi-annual	Annual	Annual	Annual	Per grant	Annual	Annual	Annual	Annual	Quarterly

Appendix - Sources and Uses

SOURCES & USES OF FUNDS - DETAILED TIMELINE

DEVELOPMENT BUDGET SUMMARY

Total Development Cost	\$202,341,886
LIHTC (4%) as % of TDC	7.23%
Monthly Interest Rate on Construction Loan	0.63%

MONTHLY CASH FLOW TIMELINE (CONSTRUCTION MONTHS 1-30 + COOP SALE M30)

Month	Phase	LIHTC Equity	Conv Equity	Soft Sources	Bridge Loan	Cumulative before loan	Const Loan Draw	Prior Loan Balance	Ending Loan Balance	Ending Cash	Beginning Cash	Total Sources	Cumulative Source	Hard Costs	Soft Costs	Interest	Base Uses	Monthly Check = 0	Base Gap	
1	Site Work & Foundations (M1)	\$0	\$2,500,000	\$0	\$0	\$2,500,000	\$2,373,311	\$0	\$2,373,311	\$7,417	\$0	\$2,500,000	\$2,500,000	\$3,857,393	\$1,008,501	\$7,417	\$4,865,894	\$0	\$2,365,894	
2	Site Work & Foundations (M2)	\$0	\$0	\$14,983,333	\$0	\$14,983,333	\$14,880	\$2,373,311	\$2,388,191	\$10,139,735	\$7,417	\$14,983,333	\$17,483,333	\$3,857,393	\$1,008,501	\$14,880	\$4,865,894	\$0	\$0	
3	Site Work & Foundations (M3)	\$0	\$0	\$0	\$0	\$0	\$14,973	\$2,388,191	\$2,403,164	\$5,288,814	\$10,139,735	\$0	\$17,483,333	\$3,857,393	\$1,008,501	\$14,973	\$4,865,894	\$0	\$0	
4	Site Work & Foundations (M4)	\$0	\$0	\$14,983,333	\$0	\$14,983,333	\$15,067	\$2,403,164	\$2,418,230	\$15,421,320	\$5,288,814	\$14,983,333	\$32,466,667	\$3,857,393	\$1,008,501	\$15,067	\$4,865,894	\$0	\$0	
5	Site Work & Foundations (M5)	\$0	\$0	\$0	\$0	\$0	\$15,161	\$2,418,230	\$2,433,392	\$10,570,587	\$15,421,320	\$0	\$32,466,667	\$3,857,393	\$1,008,501	\$15,161	\$4,865,894	\$0	\$0	
6	Site Work & Foundations (M6)	\$0	\$0	\$14,983,333	\$0	\$14,983,333	\$15,256	\$2,433,392	\$2,448,648	\$20,703,282	\$10,570,587	\$14,983,333	\$47,450,000	\$3,857,393	\$1,008,501	\$15,256	\$4,865,894	\$0	\$0	
7	Phase 1 - Market/LIHTC Construction (M7)	\$3,658,732	\$0	\$0	\$0	\$3,658,732	\$15,352	\$2,448,648	\$2,464,000	\$17,565,114	\$20,703,282	\$3,658,732	\$51,108,732	\$5,400,351	\$1,411,901	\$15,352	\$6,812,252	\$0	\$0	
8	Phase 1 - Market/LIHTC Construction (M8)	\$0	\$0	\$0	\$0	\$0	\$15,448	\$2,464,000	\$2,479,448	\$10,768,310	\$17,565,114	\$0	\$51,108,732	\$5,400,351	\$1,411,901	\$15,448	\$6,812,252	\$0	\$0	
9	Phase 1 - Market/LIHTC Construction (M9)	\$3,658,732	\$0	\$0	\$0	\$3,658,732	\$15,545	\$2,479,448	\$2,494,994	\$6,657,156	\$10,768,310	\$3,658,732	\$54,767,464	\$6,171,829	\$1,613,602	\$15,545	\$7,785,431	\$0	\$0	
10	Phase 1 - Market/LIHTC Construction (M10)	\$0	\$0	\$0	\$0	\$0	\$1,147,454	\$2,494,994	\$3,642,448	\$19,180	\$6,657,156	\$0	\$54,767,464	\$6,171,829	\$1,613,602	\$19,180	\$7,785,431	\$0	\$1,128,275	
11	Phase 1 - Market/LIHTC Construction (M11)	\$3,658,732	\$0	\$0	\$0	\$3,658,732	\$4,143,233	\$3,642,448	\$7,785,680	\$35,713	\$19,180	\$3,658,732	\$58,426,195	\$6,171,829	\$1,613,602	\$35,713	\$7,785,431	\$0	\$4,107,520	
12	Phase 1 - Market/LIHTC Construction (M12)	\$0	\$2,500,000	\$0	\$0	\$2,500,000	\$5,314,988	\$7,785,680	\$13,100,668	\$65,270	\$35,713	\$2,500,000	\$60,926,195	\$6,171,829	\$1,613,602	\$65,270	\$7,785,431	\$0	\$5,249,718	
13	Phase 1 - Market/LIHTC Construction (M13)	\$3,658,732	\$0	\$0	\$0	\$3,658,732	\$4,156,297	\$13,100,668	\$17,256,965	\$94,868	\$65,270	\$3,658,732	\$64,584,927	\$6,171,829	\$1,613,602	\$94,868	\$7,785,431	\$0	\$4,061,429	
14	Phase 1 - Market/LIHTC Construction (M14)	\$0	\$0	\$0	\$0	\$0	\$6,846,636	\$17,256,965	\$24,103,601	\$129,252	\$94,868	\$0	\$64,584,927	\$5,400,351	\$1,411,901	\$129,252	\$6,812,252	\$0	\$6,717,384	
15	Phase 1 - Market/LIHTC Construction (M15)	\$0	\$5,000,000	\$0	\$0	\$5,000,000	\$863,166	\$24,103,601	\$24,966,768	\$153,345	\$129,252	\$5,000,000	\$69,584,927	\$4,628,872	\$1,210,201	\$153,345	\$5,839,073	\$0	\$709,821	
16	Phase 1 - Market/LIHTC Construction (M16)	\$0	\$0	\$0	\$0	\$0	\$5,860,083	\$24,966,768	\$30,826,851	\$174,355	\$153,345	\$0	\$69,584,927	\$4,628,872	\$1,210,201	\$174,355	\$5,839,073	\$0	\$5,685,728	
17	Phase 1 - Market/LIHTC Construction (M17)	\$0	\$0	\$0	\$0	\$0	\$4,899,518	\$30,826,851	\$35,726,369	\$207,979	\$174,355	\$0	\$69,584,927	\$3,857,393	\$1,008,501	\$207,979	\$4,865,894	\$0	\$4,691,539	
18	Phase 1 - Market/LIHTC Construction (M18)	\$0	\$0	\$0	\$0	\$0	\$6,848,966	\$35,726,369	\$42,575,335	\$244,693	\$207,979	\$0	\$69,584,927	\$5,400,351	\$1,411,901	\$244,693	\$6,812,252	\$0	\$6,604,273	
19	Phase 2 - Coop Construction (M19)	\$0	\$0	\$0	\$0	\$0	\$6,855,077	\$42,575,335	\$49,430,412	\$287,518	\$244,693	\$0	\$69,584,927	\$5,400,351	\$1,411,901	\$287,518	\$6,812,252	\$0	\$6,567,559	
20	Phase 2 - Coop Construction (M20)	\$0	\$0	\$0	\$0	\$0	\$6,855,096	\$49,430,412	\$56,285,509	\$330,362	\$287,518	\$0	\$69,584,927	\$5,400,351	\$1,411,901	\$330,362	\$6,812,252	\$0	\$6,524,734	
21	Phase 2 - Coop Construction (M21)	\$0	\$0	\$0	\$0	\$0	\$7,831,326	\$56,285,509	\$64,116,835	\$376,257	\$330,362	\$0	\$69,584,927	\$6,171,829	\$1,613,602	\$376,257	\$7,785,431	\$0	\$7,455,069	
22	Phase 2 - Coop Construction (M22)	\$0	\$0	\$0	\$0	\$0	\$7,834,386	\$64,116,835	\$71,951,221	\$425,213	\$376,257	\$0	\$69,584,927	\$6,171,829	\$1,613,602	\$425,213	\$7,785,431	\$0	\$7,409,174	
23	Phase 2 - Coop Construction (M23)	\$0	\$0	\$0	\$0	\$0	\$7,834,396	\$71,951,221	\$79,785,617	\$474,178	\$425,213	\$0	\$69,584,927	\$6,171,829	\$1,613,602	\$474,178	\$7,785,431	\$0	\$7,360,218	
24	Phase 2 - Coop Construction (M24)	\$0	\$0	\$0	\$0	\$0	\$7,834,396	\$79,785,617	\$87,620,013	\$523,143	\$474,178	\$0	\$69,584,927	\$6,171,829	\$1,613,602	\$523,143	\$7,785,431	\$0	\$7,311,253	
25	Phase 2 - Coop Construction (M25)	\$0	\$0	\$0	\$0	\$0	\$7,834,396	\$87,620,013	\$95,454,409	\$572,108	\$523,143	\$0	\$69,584,927	\$6,171,829	\$1,613,602	\$572,108	\$7,785,431	\$0	\$7,262,288	
26	Phase 2 - Coop Construction (M26)	\$0	\$0	\$0	\$0	\$0	\$6,858,166	\$95,454,409	\$102,312,575	\$618,022	\$572,108	\$0	\$69,584,927	\$5,400,351	\$1,411,901	\$618,022	\$6,812,252	\$0	\$6,240,144	
27	Phase 2 - Coop Construction (M27)	\$0	\$0	\$0	\$0	\$0	\$5,878,876	\$102,312,575	\$108,191,452	\$657,825	\$618,022	\$0	\$69,584,927	\$4,628,872	\$1,210,201	\$657,825	\$5,839,073	\$0	\$5,221,051	
28	Phase 2 - Coop Construction (M28)	\$0	\$0	\$0	\$0	\$0	\$5,875,807	\$108,191,452	\$114,067,258	\$694,558	\$657,825	\$0	\$69,584,927	\$4,628,872	\$1,210,201	\$694,558	\$5,839,073	\$0	\$5,181,248	
29	Phase 2 - Coop Construction (M29)	\$0	\$0	\$0	\$0	\$0	\$4,899,567	\$114,067,258	\$118,966,825	\$728,232	\$694,558	\$0	\$69,584,927	\$3,857,393	\$1,008,501	\$728,232	\$4,865,894	\$0	\$4,171,336	
30	Phase 2 - Coop Construction (M30)	\$0	\$0	\$0	\$0	\$0	\$6,848,966	\$118,966,825	\$125,815,792	\$764,946	\$728,232	\$0	\$69,584,927	\$5,400,351	\$1,411,901	\$764,946	\$6,812,252	\$0	\$6,084,021	
MONTH 31: CONSTRUCTION LOAN RECONCILIATION		\$14,634,927	\$10,000,000	\$44,950,000	\$0	\$69,584,927	\$125,815,792					\$104,698,749	\$103,933,803	\$69,584,927			\$154,295,732	\$41,104,987	\$7,706,113	\$195,400,719

tion, the DevCo construction loan automatically converts to permanent financing:

CONSTRUCTION PERIOD (MONTHS 1-30):	Coop sources exceed debt to retire; excess is distributable partnership cash, not a reserve.	
Total Construction Loan Balance @ M30	\$125,815,792	Peak loan balance (cumulative draws)
Construction Loan Origination	\$2,516,316	Deferred 2%
Tax-Exempt Bonds (Permanent)	\$40,412,959	Transferred into a Permanent Loan
Total Debt to Retire	\$87,919,148	

COOP SALE TRANSACTION (MONTH 30 - PHASE 2 COMPLETION)

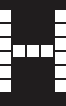
Coop purchase occurs after Phase 1 lease-up and stabilization:

Coop Purchase Price	\$92,000,000	200 units @ \$460k/unit
DevCo Receives Cash	\$92,000,000	Used for debt paydown, distributions
COOP FINANCING SOURCES:		
Member Equity (Migrants)	\$40,000,000	
Member Equity (Roxbury)	\$3,000,000	
TIF Capital Allocation	\$10,000,000	TIF \$10M
Tax-Exempt Bonds	\$20,000,000	\$20M at 4.5%
Community Notes	\$9,000,000	\$9M at 2.5%
Philanthropic Grants	\$12,000,000	Foundations + PRIs
Total Coop Sources	\$94,000,000	Total Available
Closing Costs	\$1,656,000	Spent on purchase
Total to Developer	\$92,344,000	Available to Developer to Payoff Construction Financing
Total Debt to Retire	\$87,919,148	Used to pay for Construction
Residual Cash to Partnership (distributable)	\$4,424,852	Profit to cover First Year Operating Loss

Appendix - Social and Environmental Returns Model

Harvard GSD - Maurice el Helou, Noah Johnson

REACH Roxbury - Impact Investing



ENVIRONMENTAL NPV — VALUE TO SOCIETY

NOT cash flows to the investor. Imputed societal value of avoided costs and environmental benefits.

Env NPV per public dollar: 0.38

A: AVOIDED COASTAL INFRASTRUCTURE

Confidence: MEDIUM-LOW

Component	Value	NPV (30yr)
Capital cost avoided (200)	\$3,500,000	\$3,500,000
30yr maintenance avoided	\$87,500	\$1,085,791
SECTION A TOTAL		\$4,585,791

C: PROPERTY VALUE PRESERVED (One-Time)

CAVEAT: Buyout would transfer (not destroy) value. Additionality is the avoided discount, not full value.

Property value preserved by relocation	\$7,630,000
SECTION C TOTAL	\$7,630,000

D: CARBON & ENERGY (Site-Level)

Component	Qty / Annual	Value / NPV
D1: Sequestered CO2e x SCC (one-time)	2,400	\$456,000
D2: Avoided embodied CO2e x SCC (one-time)	10,508	\$1,996,596
D3: Operational CO2 savings x SCC (30yr NPV)	\$164,000	\$2,035,084
TOTAL ENVIRONMENTAL NPV		\$4,487,680

SOCIAL RETURN ON INVESTMENT (SROI)

ANNUITY FACTOR

r = env discount rate:	7.00%
n = time horizon:	30
Annuity factor = (1 - (1+r)^-n) / r:	12.41

DENOMINATOR: PUBLIC INVESTMENT

Active denominator (per toggle):	\$81,584,927
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A: RENT DELTA (Highest Confidence — 30yr Escalation)

Year 1 total: =yr1_total_rent_delta_Coop CC = blended migrant/Roxbury equity-adjusted.

Year	Mkt Rent	Aff Rent	Blended Coop CC	Aff Δ/yr
1	\$3,286	\$1,603	\$1,395	\$1,615,286
2	\$3,401	\$1,635	\$1,430	\$1,694,906
3	\$3,520	\$1,668	\$1,466	\$1,777,774
4	\$3,643	\$1,701	\$1,502	\$1,864,014
5	\$3,770	\$1,735	\$1,540	\$1,953,752
6	\$3,902	\$1,770	\$1,578	\$2,047,122
7	\$4,039	\$1,805	\$1,618	\$2,144,259
8	\$4,180	\$1,841	\$1,658	\$2,245,305
9	\$4,327	\$1,878	\$1,700	\$2,350,408
10	\$4,478	\$1,916	\$1,742	\$2,459,720
11	\$4,635	\$1,954	\$1,786	\$2,573,399
12	\$4,797	\$1,993	\$1,830	\$2,691,609
13	\$4,965	\$2,033	\$1,876	\$2,814,518
14	\$5,139	\$2,074	\$1,923	\$2,942,304
15	\$5,319	\$2,115	\$1,971	\$3,075,147
16	\$5,505	\$2,158	\$2,020	\$3,213,238
17	\$5,697	\$2,201	\$2,071	\$3,356,770
18	\$5,897	\$2,245	\$2,123	\$3,505,948
19	\$6,103	\$2,290	\$2,176	\$3,660,981
20	\$6,317	\$2,335	\$2,230	\$3,822,086
21	\$6,538	\$2,382	\$2,286	\$3,989,490
22	\$6,767	\$2,430	\$2,343	\$4,163,425
23	\$7,004	\$2,478	\$2,402	\$4,344,134
24	\$7,249	\$2,528	\$2,462	\$4,531,867
25	\$7,502	\$2,579	\$2,523	\$4,726,886
26	\$7,765	\$2,630	\$2,586	\$4,929,457
27	\$8,037	\$2,683	\$2,651	\$5,139,862
28	\$8,318	\$2,736	\$2,717	\$5,358,388
29	\$8,609	\$2,791	\$2,785	\$5,585,335
30	\$8,910	\$2,847	\$2,855	\$5,821,013

B: AVOIDED ANNUAL LOSSES (30yr NPV)

CAVEAT: Assumes no competing buyout baseline. Additionality weakens if buyout would occur regardless.

Component	Annual	NPV (30yr)
Avoided NFIP premiums (200)	\$840,000	\$10,423,595
Avoided FEMA IA (200 HH)	\$121,200	\$1,503,976
Avoided emergency response	\$200,000	\$2,481,808
SECTION B TOTAL		\$14,409,379

TOTAL ENVIRONMENTAL NPV

Component	NPV (30yr)	% of Total
A: Avoided Infrastructure	\$4,585,791	14.74%
B: Avoided Annual Losses	\$14,409,379	46.31%
C: Property Value	\$7,630,000	24.52%
D: Carbon & Energy	\$4,487,680	14.42%
TOTAL ENVIRONMENTAL NPV	\$31,112,849	

NPV of 30-Year Rent Delta

NPV of 30-Year Rent Delta: \$121,768,852

B: WEALTH BUILDING — Realizable Equity Only (No double-count)

Rent savings are in Section A. Section B = share appreciation + dividends ONLY.	
Roxbury annual equity appreciation	\$112,500
Migrant annual equity appreciation	\$1,500,000
Total annual dividends (200 members)	\$1,275,000
Total annual wealth increment (Yr1)	\$2,887,500
NPV of wealth building (30yr)	\$35,831,106

C: DISPLACEMENT PREVENTION (Low Confidence — 50% haircut)

Annual displacement prevention value	\$52,500
NPV (30yr)	\$651,475

D: HEALTH & AMENITY CO-BENEFITS (Low-Medium)

Health clinic: avoided ER x cost	\$400,000
Food hub: HH x food cost	\$123,000
Workforce: grads x earnings	\$240,000
Total annual health/amenity	\$763,000
NPV (30yr)	\$9,468,098

E: MUNICIPAL FISCAL (Medium)

Net new property tax	\$718,888
Permanent job tax revenue	\$585,000
Total annual municipal	\$1,303,888
NPV (30yr)	\$16,179,995

ONE-TIME: Construction job value

ONE-TIME: Construction job value	\$58,317,757
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TOTAL SOCIAL VALUE & SROI RATIOS

Metric	Value
UNWEIGHTED TOTAL NPV	\$242,217,283
CREDIBILITY-WEIGHTED TOTAL NPV	\$224,944,270
Unweighted SROI	2.97
CREDIBILITY-WEIGHTED SROI	2.76
Rent-delta-only SROI (floor)	1.49
SROI excl LIHTC in denominator	3.36

OPPORTUNITY COST: STATUS QUO vs. REACH (30-Year NPV)

All annual values discounted to present value at social discount rate. NFIP at 5%/yr escalation.

Year	SQ: NFIP	SQ: FEMA IA	SQ: Emergency	SQ: Buyout	SQ: Post-Buyout	SQ: Annual	SQ: PV	REACH: Annual	REACH: PV	NPV Delta
0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	-\$81,584,927	-\$81,584,927	-\$81,584,927
1	\$840,000	\$121,200	\$200,000	\$0	\$0	\$1,161,200	\$1,085,234	\$10,920,588	\$10,206,157	-\$72,464,004
2	\$882,000	\$121,200	\$200,000	\$0	\$0	\$1,203,200	\$1,050,921	\$11,259,126	\$9,834,157	-\$63,680,769
3	\$926,100	\$121,200	\$200,000	\$0	\$0	\$1,247,300	\$1,018,168	\$11,608,159	\$9,475,715	-\$55,223,222
4	\$972,405	\$121,200	\$200,000	\$0	\$0	\$1,293,605	\$986,885	\$11,968,012	\$9,130,339	-\$47,079,768
5	\$1,021,025	\$121,200	\$200,000	\$0	\$0	\$1,342,225	\$956,988	\$12,339,020	\$8,797,551	-\$39,239,206
6	\$1,072,077	\$121,200	\$200,000	\$0	\$0	\$1,393,277	\$928,399	\$12,721,530	\$8,476,892	-\$31,690,712
7	\$1,125,680	\$121,200	\$200,000	\$0	\$0	\$1,446,880	\$901,044	\$13,115,897	\$8,167,921	-\$24,423,835
8	\$1,181,964	\$121,200	\$200,000	\$0	\$0	\$1,503,164	\$874,855	\$13,522,490	\$7,870,212	-\$17,428,478
9	\$1,241,063	\$121,200	\$200,000	\$0	\$0	\$1,562,263	\$849,767	\$13,941,687	\$7,583,354	-\$10,694,892
10	\$1,303,116	\$121,200	\$200,000	\$0	\$0	\$1,624,316	\$825,720	\$14,373,879	\$7,306,951	-\$4,213,660
11	\$1,368,271	\$121,200	\$200,000	\$0	\$0	\$1,689,471	\$802,656	\$14,819,470	\$7,040,623	-\$2,024,307
12	\$1,436,685	\$121,200	\$200,000	\$0	\$0	\$1,757,885	\$780,522	\$15,278,873	\$6,784,002	-\$8,027,788
13	\$1,508,519	\$121,200	\$200,000	\$0	\$0	\$1,829,719	\$759,268	\$15,752,518	\$6,536,735	-\$13,805,254
14	\$1,583,945	\$121,200	\$200,000	\$0	\$0	\$1,905,145	\$738,848	\$16,240,846	\$6,298,480	-\$19,364,886
15	\$1,663,143	\$121,200	\$200,000	\$30,000,000	\$0	\$31,984,343	\$11,592,598	\$16,744,312	\$6,068,909	-\$13,841,198
16	\$1,746,300	\$121,200	\$200,000	\$0	\$752,500	\$2,820,000	\$955,231	\$17,263,386	\$5,847,706	-\$18,733,673
17	\$1,833,615	\$121,200	\$200,000	\$0	\$734,118	\$2,888,932	\$914,562	\$17,798,551	\$5,634,565	-\$23,453,676
18	\$1,925,295	\$121,200	\$200,000	\$0	\$717,778	\$2,964,273	\$877,021	\$18,350,306	\$5,429,193	-\$28,005,848
19	\$2,021,560	\$121,200	\$200,000	\$0	\$703,158	\$3,045,918	\$842,222	\$18,919,166	\$5,231,307	-\$32,394,934
20	\$2,122,638	\$121,200	\$200,000	\$0	\$690,000	\$3,133,838	\$809,843	\$19,505,660	\$5,040,633	-\$36,625,723
21	\$2,228,770	\$121,200	\$200,000	\$0	\$678,095	\$3,228,065	\$779,620	\$20,110,335	\$4,856,909	-\$40,703,013
22	\$2,340,209	\$121,200	\$200,000	\$0	\$667,273	\$3,328,681	\$751,327	\$20,733,756	\$4,679,882	-\$44,631,567
23	\$2,457,219	\$121,200	\$200,000	\$0	\$657,391	\$3,435,810	\$724,773	\$21,376,502	\$4,509,306	-\$48,416,100
24	\$2,580,080	\$121,200	\$200,000	\$0	\$648,333	\$3,549,613	\$699,794	\$22,039,174	\$4,344,949	-\$52,061,254
25	\$2,709,084	\$121,200	\$200,000	\$0	\$640,000	\$3,670,284	\$676,247	\$22,722,388	\$4,186,581	-\$55,571,589
26	\$2,844,538	\$121,200	\$200,000	\$0	\$632,308	\$3,798,046	\$654,006	\$23,426,782	\$4,033,986	-\$58,951,569
27	\$2,986,765	\$121,200	\$200,000	\$0	\$625,185	\$3,933,150	\$632,963	\$24,153,012	\$3,886,953	-\$62,205,559
28	\$3,136,103	\$121,200	\$200,000	\$0	\$618,571	\$4,075,875	\$613,021	\$24,901,756	\$3,745,279	-\$65,337,817
29	\$3,292,908	\$121,200	\$200,000	\$0	\$612,414	\$4,226,522	\$594,092	\$25,673,710	\$3,608,769	-\$68,352,494
30	\$3,457,554	\$121,200	\$200,000	\$0	\$606,667	\$4,385,421	\$576,100	\$26,469,595	\$3,477,234	-\$71,253,629

SENSITIVITY ANALYSIS — COMPUTED SCENARIOS

Each variable stressed independently, computed impact on Env NPV and SROI

THREE-SCENARIO OUTPUTS (fully recalculated)

Scenario	Env NPV	Rent NPV (re-discounted)	Approx SROI (CW)	Key Drivers
Conservative	\$7,300,000	\$58,003,805	0.80	10% social DR (stress), research conservative env
Base	\$31,112,849	\$121,768,852	2.76	Model defaults (7% FEMA BCA rate)
Optimistic	\$23,900,000	\$147,116,132	2.10	3.5% social DR (OMB A-4), wider rent gap, research optimistic env

TORNADO: SROI IMPACT BY VARIABLE (sorted by magnitude)

Variable	Low	Base	High	SROI at Low	SROI at High	Swing
LIHTC in denom (toggle)	0	1	1	3.36	2.76	0.60
Social discount rate	3.50%	7.00%	10.00%	4.09	2.09	1.99
Market rent escalation	2.50%	3.50%	4.50%	2.38	3.28	0.90
SCC (\$/tCO2e)	120	190	255	2.62	2.89	0.27
Dividend per member	0	6375	8500	2.38	2.88	0.50

SUMMARY (NPV at social discount rate)

NPV SQ costs	\$35,252,698
NPV REACH value	\$106,506,327
NPV Delta	\$71,253,629
REACH NPV per \$1 publ	1.31

Appendix - Social and Environmental Returns Model

Three-Return Model

Financial IRR 20.15% · Environmental NPV \$31.1M · Social SROI 2.76:1 · All values from TRM v3 workbook

20.15%

Financial IRR (Levered)

\$31.1M

Environmental NPV (Model)

2.76:1

Social SROI (CW)

Financial Return

Levered IRR of 20.15% with 6.15x equity multiple on \$202.3M TDC (400 units: 200 cooperative, 120 market-rate, 80 affordable at 60% AMI). Year 1 stabilized NOI: \$3,353,614. Exit cap 5.2% at year 15. Phase 1 pencils as conventional mixed-income housing in Roxbury's strong rental market, viable absent the cooperative thesis entirely.

TRM v3 Assumptions sheet; 15-year hold; DSCR 0 [1]

Environmental NPV: Four Components

Total environmental NPV: \$31.1M at 7% discount rate (FEMA BCA April 2025) over 30 years (annuity factor 12.41). Four value drivers: avoided coastal infrastructure (\$4.6M, 15% of total), avoided annual flood losses (\$14.4M, 46%), property value preservation (\$7.6M, 25%), and carbon/energy value (\$4.5M, 14%). Avoided NFIP premiums (\$840K/yr for 200 households) are the single largest annual component. Carbon storage: 2,400 tCO2e sequestered in CLT structure, valued at EPA SCC \$190/tCO2e. Environmental NPV per public dollar: \$0.38.

TRM v3 Environmental NPV sheet; EPA SCC 2024; FEMA BCA 7% rate [2]

Social SROI: Six Benefit Streams

SVI 6-stage methodology at 7% discount rate (FEMA BCA April 2025, annuity factor 12.41). Denominator: \$81,584,927 in public and philanthropic capital (40.3% of TDC). Credibility-weighted SROI: 2.76:1. Unweighted: 2.97:1. Rent-delta-only floor: 1.49:1.

TRM v3 Social SROI sheet; credibility weights analyst-determined [3]

Component	Annual	30-yr NPV	Wt	Wtd NPV
Rent Delta (280 units)	\$0	\$121.8M	1.00	\$121.8M
Wealth Building	\$2,887,500	\$35.8M	0.85	\$30.5M
Displacement	\$52,500	\$651,475	0.50	\$325,737
Health & Amenity	\$763,000	\$9.5M	0.65	\$6.2M
Municipal Fiscal	\$1,303,888	\$16.2M	0.85	\$13.8M
Construction (1x)	\$58,317,757	one-time	0.90	\$52.5M
CW TOTAL				\$224.9M

Public Equity Return

\$81.6M in public and philanthropic capital constitutes 40.3% of the \$202.3M capital stack. Environmental NPV (\$31.1M) plus credibility-weighted social benefits (\$224.9M) produce a combined public return of 3.1x on that investment. The conventional view treats public subsidies as costs to minimize. REACH reframes them as equity investments to maximize.

TRM v3; public denominator \$81,584,927 [3]

Sensitivity: Three Scenarios (Workbook-Computed)

Conservative: Env NPV \$7.3M, Rent NPV \$58.0M, SROI 0.80:1. Drivers: 10% social DR (stress), research conservative env

Base: Env NPV \$31.1M, Rent NPV \$121.8M, SROI 2.76:1. Drivers: Model defaults (7% FEMA BCA rate)

Optimistic: Env NPV \$23.9M, Rent NPV \$147.1M, SROI 2.10:1. Drivers: 3.5% social DR (OMB A-4), wider rent gap, research optimistic env

TRM v3 Sensitivity sheet; scenarios fully recalculated [4]

Tornado: SROI Impact by Variable

Social discount rate: swing 1.99 (4.09–2.09). Market rent escalation: swing 0.90 (2.38–3.28). LIHTC in denom (toggle): swing 0.60 (3.36–2.76).

Dividend per member: swing 0.50 (2.38–2.88). SCC (\$/tCO2e): swing 0.27 (2.62–2.89).

TRM v3 Sensitivity sheet; sorted by SROI swing magnitude [4]

Methodology Notes

Discount rate: 7% for both environmental and social NPV, aligned with FEMA BCA methodology (April 2025 reversion from 3.1% to 7%). This choice is the single largest methodological driver. At 3.5% (OMB A-4 November 2023 revision, UK Green Book), all NPVs increase substantially. The model uses the more conservative FEMA rate. SCC at \$190/tCO2e is EPA 2024 central estimate. Not double-discounting: SCC prices one ton at a point in time; the discount rate converts annual values to present value. One prices the externality, the other prices time. Credibility weights range from 0.50 (displacement, lowest confidence) to 1.00 (rent delta, highest). 25 sources registered in workbook Source Registry. No SROI precedent exists for CLTs, cooperative housing, or mixed-income developments. This model operates in uncharted methodological territory.

TRM v3 Source Registry; OMB A-4 Nov 2023; FEMA BCA Apr 2025 [1, 4]

The question is not whether society invests. It is whether that investment earns a return or gets spent on disaster cleanup.

1. TRM v3 workbook: 25 registered sources. Discount rate: 7% (FEMA BCA April 2025). Annuity factor: 12.41.
 2. Env NPV uses 7% discount rate. EPA SCC \$190/tCO2e. Four components: infrastructure, flood loss, property value, carbon/energy.
 3. SROI denominator: \$81,584,927 (40.3% of TDC). Credibility weights are analyst-determined haircuts.
 4. Sensitivity: 5 variables tested. Tornado sorted by SROI swing magnitude. Scenarios fully recalculated in workbook.



Cooperative Ownership, Construction Technology & Environmental Return

Zurich adaptation methodology · Wealth trajectory evidence gaps · Mass timber cost verification · Environmental NPV four drivers

Zurich Model: What REACH Borrows and Where It Diverges

Members purchase a share certificate (Anteilschein) at entry, typically 5–10% of construction cost. Share values appreciate only in line with statutory revaluation formulas. Key distinction from REACH: Zurich cooperatives typically do not allow significant equity appreciation. REACH's CPI + 25% cap is more generous than the Zurich norm (CPI + 0–5%). REACH is a hybrid — it borrows cooperative governance and cost-rent from Zurich but adapts the equity mechanism to build wealth more aggressively for U.S. households who lack other wealth-building pathways. Turnover in Zurich cooperatives runs 3–5% annually versus 15–25% for market-rate rental housing. In 2011, Zurich voters approved a referendum mandating that one-third of all housing be non-profit by 2050.

Bundesamt für Wohnungswesen 2023; Zurich Wohnbaugenossenschaften [1]

American Precedents and the Evidence Gap

Co-op City: \$618–\$950/mo carrying charges versus market rents of \$1,800–\$2,800. Penn South members voted against privatization three times, forgoing over \$1M/unit in potential market-rate conversion value. Champlain Housing Trust's 25% appreciation-share formula yielded \$49,776 average resale equity across 115 transactions (2019–2023). Critical finding: the academic literature on wealth accumulation in limited-equity cooperatives is remarkably thin. No peer-reviewed RCT or quasi-experimental study compares LEC member wealth trajectories to a matched control group over time. REACH is operating in an evidence gap.

Evidence gap disclosure; CHT Stewardship Report 2023 [2]

Wealth Trajectory Methodology and Limitations

Realizable equity (balance-sheet wealth): share equity + appreciation (~\$75,437) + cumulative dividends (~\$191,250) = ~\$266,687. Total economic benefit including rent savings: ~\$1,316,326.6M, of which ~\$267K is balance-sheet wealth. Boston Fed \$8 median Black wealth is from 2015, NOT replicated. National SCF 2022 shows \$44,890 nationally but Boston-specific conditions may differ. For conservative modeling, we use \$8 as local baseline but note the national figure. Renter counterfactual: ~\$175/yr accumulation = ~\$5,300 over 30 years.

Year	Share Value	Cum. Dividends	Realizable Eq.	Total Benefit
Year 0	\$25,000	\$0	\$25,000	\$25,000
Year 10	\$36,126	\$63,750	\$99,876	\$319,278
Year 20	\$52,204	\$127,500	\$179,704	\$731,404
Year 30	\$75,437	\$191,250	\$266,687	\$1,316,327

Boston Fed 'Color of Wealth' (2015) [NOT REPLICATED]; CHT resale data; TRM v3 Assumptions [2, 3]

Mass Timber Cost Verification

BPDA Mass Timber Accelerator: hybrid CLT-on-podium adds 2.2% / \$8.45/SF versus baseline. Verification note: these figures are cited from the BPDA report (2024); specific page could not be independently verified during audit due to PDF constraints, but source is official City of Boston publication. Schedule benefit: a 1–3 month gain is a reasonable proxy range, not a verified promise. On this scale, that can plausibly save \$1.5M–\$4.0M across GC, carry, and risk, but too project-specific to treat as fully verified. MassCEC Passive House: 2.3% average premium (range 1.0–4.3%). One project cut \$400K in HVAC by downsizing mechanical systems thanks to improved envelope.

BPDA Accelerator 2024 [page not independently verified]; MassCEC PH tracking [4]

Carbon Claims: What Is and Isn't Defensible

A whole-building 'carbon-negative from day 1' claim requires an explicit whole-building LCA, defined standard, transparent biogenic carbon treatment, and end-of-life assumption. Without that, the finance-defensible claim is: REACH can credibly claim substantial embodied-carbon reduction plus significant biogenic carbon storage in the timber structure, but not a fully substantiated whole-building carbon-negative result. Biogenic carbon monetization: not found verified evidence that structural carbon in U.S. mass timber is routinely monetized as tradeable credit. Should not be underwritten as revenue.

Carbon claim limitations; biogenic carbon not tradeable [UNSOURCED for revenue] [4]

Environmental NPV: Four Drivers and Critical Gaps

Four components: (1) avoided flood infrastructure (retaining wall alternative), (2) flood damage reduction (FEMA BCA depth-damage functions), (3) property value preservation, (4) carbon + energy value. Critical caveat: the avoided infrastructure cost calculation requires site-specific engineering input — specifically the exact linear footage of northern boundary requiring protection and required wall height. Estimates use proxy assumptions that must be validated by civil engineer. The retaining wall cost range is 16:1 (\$209K–\$3.4M) — this is the highest-priority item for follow-up. SCC at \$190/tCO_{2e} (EPA 2024 central estimate). Imputed carbon storage value: \$456K (at \$190) to \$612K (at \$255).

Scenario	Adj. Env NPV (30yr)	Per Unit
Conservative	\$7.3M	\$18,193
Base	\$14.4M	\$36,115
Optimistic	\$23.9M	\$59,855

Northern boundary [REQUIRES ENGINEERING]; EPA SCC 2024; USACE proxy costs [5]

Evidence gaps disclosed: No RCT on LEC wealth trajectories. \$8 Black wealth figure not replicated since 2015. Carbon-negative claim requires full LCA. Retaining wall cost has 16:1 range pending engineering. Biogenic carbon not tradeable as revenue.

1. Bundesamt für Wohnungswesen 2023; Zurich cooperative annual reports; CHT Stewardship 2023.
 2. Boston Fed 'Color of Wealth in Boston' (2015) — not formally replicated. CHT 115-transaction resale dataset.
 3. REACH Three-Return Model v3, Assumptions sheet. Wealth trajectories computed from CPI + 25% appreciation + annual dividend.
 4. BPDA Mass Timber Accelerator 2024; MassCEC Passive House tracking (7 projects). Carbon-negative claim unsubstantiated without full LCA.
 5. Env NPV components. Northern boundary linear footage [REQUIRES ENGINEERING]. EPA SCC \$190/tCO_{2e} (2024). Biogenic carbon [NOT TRADEABLE AS REVENUE].
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Legal Framework, Capital Architecture & Philanthropic Alignment

TDR constitutional foundation · CRC securities analysis · \$202.3M capital stack methodology · 7-foundation evidence base

TDR Constitutional Foundation and CRC Divergence

Penn Central treats TDR as relevant to regulatory-takings analysis but provides no safe harbor; Suitum confirms TDR value and takings liability are analytically distinct. Five programs across New Jersey, Montgomery County, King County, New York City, and Palm Beach County have protected 300,000+ acres using parcel-to-parcel transfer mechanics. However: REACH's CRC is not a standard TDR if it is truly household-portable and partly detachable from a specific receiving parcel. Massachusetts Ch. 40A §1A defines TDR as a parcel-to-parcel transfer: one parcel's owner conveys development rights, another parcel's owner exercises them. A CRC that functions as a household-held relocation/equity credit is a new hybrid instrument: part buyout compensation, part relocation incentive, part cooperative-equity contribution. CRC requires new legislation to govern six functions: eligibility, valuation, issuance, conversion, consumer protections, and inter-municipal administration.

Penn Central v. NYC (1978); Suitum v. Tahoe RPA (1997); Mass. Gen. Laws ch. 40A §1A [1]

Securities Classification: Howey vs. Forman

If CRC is transferred to third parties, pooled into an enterprise with shared returns, marketed as a wealth-building or appreciation vehicle, or detached from owner-occupancy, it moves toward Howey territory. A nontransferable, owner-occupancy-conditioned CRC has a plausible Forman defense: when the purchaser is motivated by desire to use or consume the item purchased—especially to obtain housing rather than profit—securities laws may not apply. Recommended naming discipline: call the zoning side “climate-adaptation TDR,” call the household side “Climate Relocation Credit.” Describe CRC as “TDR-informed,” not simply “a TDR,” unless the final statute keeps the credit legally tethered to a receiving parcel's density bonus.

SEC v. Howey (1946); UHF v. Forman (1975); recommended naming discipline [1]

Capital Stack: Two-Track Architecture

The legally grounded structure is a two-track capital stack: (1) buyout/relocation side in Revere via FEMA HMGP or FMA/Swift Current for voluntary acquisitions, and (2) receiving-area housing side in Roxbury via HOME, LIHTC, MassHousing, and state soft sources. Critical gap: no Massachusetts CDBG-MIT allocation was found in reviewed 2019 and 2021 Federal Register notices or HUD's March 2025 grant report. BRIC was terminated April 2025, permanently enjoined by federal court December 2025, and reopened March 2026 with approximately \$1B available (July 2026 application deadline). HMGP precedent: Spicket River Floodplain Acquisition relocated 22 owners and tenants using 75% HMGP plus 25% HUD CDBG, total cost \$1,411,430. Senate passed the ROAD Act (S.2651) October 2025 but removed during House conference—not law, but signals bipartisan support for disaster-recovery housing provisions.

FEMA HMGP; Spicket River precedent; BRIC court reinstatement Dec 2025; ROAD Act S.2651 [2]

MassHousing + State Sources

MassHousing \$16M soft debt at 0–2% deferred 40 years (single largest soft source in the capital stack). DHCD Affordable Housing Trust Fund \$4M plus Housing Stabilization Fund \$2M. Chapter 121A tax exemption combined with CLT ground lease at \$1/year eliminates \$10–15M in land acquisition cost. Qualified Census Tract 25025080401 provides a 1.30× LIHTC basis boost, increasing equity proceeds. Massachusetts LIHTC annual cap: \$60M plus unused/returned credits plus \$5M preservation set-aside. MassHousing Workforce Housing Initiative provides up to \$100,000 subsidy per workforce unit; agency had \$56.3M available for future disbursements as of June 30, 2024.

MassHousing FY24; MA DHCD; M.G.L. c. 121A; HUD 2026 QCT List [2]

Philanthropic Alignment: Named Precedents and Entry Strategy

Verified grants to comparable projects: DSNI resilience hub plus CLT (\$1M from Barr), Barr's \$5M MHIC PRI, Ford's \$1B MRI commitment with affordable housing as initial focus, Kresge's \$9M in housing PRIs (2024), and TBF's ETOD Accelerator preserving 1,500+ units. Foundation-by-foundation analysis from primary sources:

Barr Foundation: Climate Resilience strategy explicitly targets “how we build new and adapt existing buildings.” DSNI grant: \$1M over 3 years for resilience hub and CLT Network capacity in Roxbury. \$5M PRI to MHIC for Boston Acquisition Fund. \$25M Racial Wealth Equity Initiative deployed to 21 organizations. Named contacts: Lisette Le (Racial Wealth Equity Director), Kalila Barnett (Senior Program Officer, Climate Resilience).

Ford Foundation: \$600M+ in PRIs since 1968, the pioneer of program-related investments. \$1B mission-related investment commitment (2017) with U.S. affordable housing as initial focus—largest such commitment by a U.S. foundation. PRIs typically \$1–10M for predevelopment, site acquisition, and community outreach. Estimated ask: \$3–5M PRI plus \$500K grant.

Kresge Foundation: \$350M social investment board commitment. \$9M in housing PRIs deployed in 2024 alone: \$4M Fresno Housing Authority, \$2M Detroit homeownership (Opportunity Resource Fund), \$2M National Community Stabilization Trust acquisition bridge. Funded ULI “Receiving Communities” report on climate gentrification—directly relevant to REACH's model.

Boston Foundation: \$5M PRI to MHIC for Boston Acquisition Fund; ETOD Accelerator Fund co-invested with Hyams, Barr, and MassDevelopment, preserving 1,500+ units near transit; Carpe Diem Fund: \$500K PRI plus \$100K grant at 1% interest for 114 units in East Boston via community trust governance model. Boston Acquisition Fund target: City \$5M grant plus \$8M private capital toward \$25M total, 500 homes in 5 years.

Foundation 990s, annual reports, named grant announcements [3]

Novelty as Asset and Risk

No single prior project has combined all five REACH elements (CLT, cooperative, CRC, mass timber, climate relocation), making REACH novel. This novelty is simultaneously the project's greatest philanthropic asset—foundations seek innovation—and risk—no exact precedent to point to. PRIs are recoverable capital, not grants: they count toward the IRS 5% annual distribution requirement while returning principal to the foundation. The recommended strategy oversubscribes (\$18.2M in asks against \$12M target) to account for declines and partial commitments. Tier 1 anchors (Barr, Boston Foundation) carry 65–70% estimated probability; Tier 2 (Ford, LISC, Enterprise) carry 40–50%; Tier 3 (Kresge, RWJF) carry 20–40%. Expected value of the full pipeline: approximately \$12M.

IRS PRI guidance; foundation annual reports; probability estimates are editorial [3]

Honest limitations: No MA CDBG-MIT allocation found. CRC requires new legislation. ROAD Act not law. No prior project combines all five REACH elements. Every gap is disclosed, not hidden.

1. *Penn Central v. NYC, 438 U.S. 104 (1978); Suitum v. Tahoe RPA, 520 U.S. 725 (1997); Mass. Gen. Laws ch. 40A §1A, ch. 21A §27, ch. 10 §35HHH.*
2. *FEMA HMGP/BRIC; Spicket River precedent (\$1.4M, 22 owners); MassHousing FY24; MA DHCD AHTF/HSF; M.G.L. c. 121A; HUD QCT List 2026. CDBG-MIT: no MA allocation found.*
3. *Barr Foundation Form 990 (2023); Ford Mission Investments; Kresge Social Investment 2024; Boston Foundation FY2025; Carpe Diem Fund (2021).*

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All claims sourced to primary research (Appendix E). [UNSOURCED] flags preserved from audit.



Philanthropic Alignment: \$12M Target Across 7 Foundations with Named Precedents

7 Foundations Targeted	\$12M Philanthropic Capital Goal	\$5M Largest Single PRI Verified	\$600M+ Ford PRIs Since 1968	\$350M Kresge Social Investments	1,500+ Units via ETOD Accelerator
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The Philanthropic Thesis

Climate-resilient cooperative housing matches at least four active foundation priorities at once: climate adaptation, racial wealth equity, community ownership, and anti-displacement.¹

That convergence is not theoretical. In 2024 alone, Barr committed \$5M to MHIC for affordable housing preservation in Boston. It separately funded DSNI's resilience hub and CLT Network capacity in Roxbury at \$1M over three years.⁶

The \$12M target distributes risk across seven foundations. None is asked for more than its demonstrated capacity. Every dollar is precedented.

Foundation-by-Foundation Precedent

Barr Foundation

Barr's \$5M PRI to MHIC and \$1M grant to DSNI for climate resilience in Roxbury prove the foundation already funds both the financial instruments and the neighborhood that define REACH.¹

Ford Foundation

Ford pioneered the PRI in 1968 and has committed \$600M+ in program-related investments for affordable housing. A separate \$1B mission-related investment allocation targets U.S. housing as its initial focus.²

Kresge Foundation

Kresge's \$350M social investment commitment produced \$9M in housing PRIs in 2024 alone. That includes \$4M for Fresno Housing Authority and \$2M for homeownership in Detroit.³

Boston Foundation

The \$5M MHIC PRI, ETOD Accelerator preserving 1,500+ transit-adjacent units, and Carpe Diem Fund at 1% interest establish the local co-investment pattern REACH requires.⁴

Bloomberg, JPB, Surdna

Bloomberg channels \$200M through municipal partnerships. JPB's \$500M budget pivoted toward democracy and movement building. Surdna's environments program supports communities of color directing land use investment.⁵

The PRI Advantage

Program-related investments are recoverable capital, not grants. A \$5M PRI at 1% interest over 10 years returns principal to the foundation. It also counts toward the 5% annual distribution requirement.⁷

For REACH, PRIs lower the cost of capital below any commercial source. They also align funder incentives with long-term project success. The Carpe Diem Fund's 1% terms show that Boston foundations already deploy capital at this price.⁹

7-Foundation Philanthropic Strategy

Foundation	Named Precedent	Mission Fit	REACH Ask
Barr	\$5M MHIC PRI; \$1M DSNI resilience hub (2024)	Climate resilience + racial wealth equity	\$3-5M
Ford	\$600M+ housing PRIs since 1968; \$1B MRI commitment	Predevelopment for community-controlled housing	\$3-5M
Kresge	\$350M social investment; \$9M housing PRIs (2024)	Climate resilience + equitable development	\$2-4M
Boston Fdn.	\$5M MHIC PRI; ETOD Accelerator (1,500+ units)	Local co-investor; cooperative housing	\$1.5-3M
Bloomberg	\$200M American Sustainable Cities initiative	Municipal climate channel	\$0.5-1M
JPB / Freedom	\$500M annual grantmaking; housing/health history	Cooperative governance + movement bldg.	\$0.5-1M
Surdna	PolicyLink, Emerald Cities; \$1B endowment	Sustainable environments + incl. economies	\$0.25-0.5M

Sources: Foundation 990s, annual reports, named grant announcements (fn. 1-5)

Named Precedents at \$5M+ Scale

Foundation	Recipient / Program	Amount	Year	Description
Barr	MHIC / Boston Acquisition Fund	\$5M	2024	PRI: affordable housing preservation, Boston
Boston Fdn.	MHIC / Boston Acquisition Fund	\$5M	2024	\$8M private tranche for housing acquisition
Kresge	Detroit + Fresno housing pipeline	\$9M	2024	PRI package across multiple housing authorities
Ford	Cumulative housing PRIs	\$600M+	Since 1968	Below-market predevelopment loans nationally
Ford	Endowment MRI allocation	\$1B	2017	Affordable housing as initial MRI focus
Kresge	Board social investment commitment	\$350M	Since 2015	\$348.5M deployed through 2021

Sources: Barr quarterly reports, Ford mission investments, Kresge social investment reports (fn. 2-4, 8)

1. Barr Foundation, Quarterly Grant Reports 2022-2024; Form 990 (2023), ~\$1.9B net assets, ~\$130M annual grantmaking.

2. Ford Foundation, 'Mission Investments,' fordfoundation.org (2017); \$1B MRI commitment; \$600M+ in PRIs since 1968.

3. Kresge Foundation, Social Investment Practice Report (2024); \$350M board commitment (2015); \$348.5M deployed through 2021.

4. Boston Foundation, Annual Report FY2025; \$2.2B total assets; MHIC Boston Acquisition Fund \$5M PRI (2024); ETOD Accelerator 1,500+ units.

5. Bloomberg Philanthropies, '\$200M American Sustainable Cities Initiative,' Axios (Mar 2024). JPB Foundation, Philanthropy News Digest (2024). Surdna Foundation, surdna.org.

6. Barr Foundation, DSNI Grant Award (2024), \$1M/3yr for resilience hub + CLT Network capacity, Roxbury, MA.

7. Ford Foundation, 'How Program-Related Investments Disrupt Inequality,' fordfoundation.org; below-market loans for predevelopment and community outreach.

8. Kresge Foundation, Fresno Housing Authority PRI (\$4M, 2024); Detroit Opportunity Resource Fund PRI (\$2M, 2024); pipeline total \$9M.

9. Boston Foundation, Carpe Diem Fund (2021): \$600K (\$100K grant + \$500K PRI at 1%) for East Boston Neighborhood Trust, 114 units.

REACH Roxbury Research Appendix | Page 6



Managed Retreat at Scale: Blue Acres Proves the Model, REACH Fills the Gap

1,200+ Blue Acres Properties Acquired <small>(NJ, since 1995)</small>	12-18 months Typical Closing Timeline <small>(vs. 3-7 years federal)</small>	77% Offer Acceptance Rate <small>(618 of 806 post-Sandy)</small>	\$1.3M / household Isle de Jean Charles Cost <small>(37 families, 8+ years)</small>
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The Institutional Precedent

New Jersey's Blue Acres program has acquired more than 1,200 flood-prone properties since 1995, compressing typical federal buyout timelines from 3-7 years to 12-18 months.¹

Blue Acres differs from standard FEMA pass-through in institutional depth. It pairs constitutionally protected state funding with specialized case management, mortgage workouts for underwater homeowners, and strategic municipal clustering that converts scattered acquisitions into contiguous open space. At one post-Sandy milestone, 618 of 806 formal offers were accepted, a 77% uptake rate reflecting the program's credibility with homeowners.¹

The Structural Gap

Blue Acres excels at removing people from repeated-loss locations. It fails where no buyout program operates: the receiving end. No statewide dataset tracks where participants relocate. No systematic measurement of post-move housing cost burden exists.²

The most common reason offers are declined is that the buyout amount cannot secure replacement housing. This is a failure of destination economics, not program design. Buyouts compensate asset loss. They do not recreate neighborhood institutions, tenant protections, or affordable housing supply in the places people land.²

The Comparison Set

New York's NY Rising program achieved 75% uptake across 2,034 eligible properties by pairing pre-storm valuations with cluster incentives (+10%) and same-county bonuses (+5%). Harris County, Texas has operated voluntary buyouts for decades, turning each local dollar into two to four federal dollars. It remains hostage to 8-12 month post-disaster startup lag.³

At the opposite extreme sits Louisiana's Isle de Jean Charles resettlement, the only U.S. program to attempt receiving-area community design. It spent \$48M of a \$92M HUD grant to resettle just 37 families over 8+ years, roughly \$1.3M per household. The lesson is not that receiving-area strategy is unworkable. It is that receiving-area strategy becomes prohibitively expensive when grafted onto one-off disaster recovery rather than built into fiscal architecture.³

The CRC Bridge

The Climate Relocation Credit preserves everything that works in Blue Acres (voluntary participation, property-based compensation, permanent open-space conversion) and adds what no current program provides. It creates a portable equity instrument that capitalizes receiving-area housing production, links relocation to cooperative tenure, and tracks community continuity outcomes existing programs ignore.⁴

Blue Acres writes a check that ends one housing problem and creates another. The CRC converts that same fiscal expenditure into permanent community wealth. The marginal cost of adding destination infrastructure is modest compared to the opportunity cost of not doing so. FEMA has spent roughly \$4 billion acquiring 46,000 properties over 35 years, producing zero housing units and zero long-term community value.⁴

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U.S. Managed Retreat Programs: Five-Program Comparison

Program	Scale	Funding	Timeline	Key Metric	Gap CRC Addresses
Blue Acres (NJ)	1,200+ properties	~\$300M (post-Sandy)	12-18 months	77% acceptance rate	No destination tracking; no receiving-area strategy
NY Rising (NY)	1,519 of 2,034 eligible	~\$430M in closings	Multi-year (post-Sandy)	~75% uptake; cluster incentives	No community reconstitution
Harris County (TX)	Decades-long local program	2-4x federal leverage	8-12 mo. startup lag	Standing local institution	Still hostage to federal funding lag
Isle de Jean Charles (LA)	37 families resettled	\$48M of \$92M HUD	8+ years (ongoing)	~\$1.3M per household	Proves receiving-area design; too slow at scale
Charlotte-Mecklenburg (NC)	Sustained local buyout capacity	Local revenue + FEMA grants	Ongoing, recurring	Institutional continuity	No equity tracking; market-rate re-entry only

The Fiscal Backdrop

The NFIP owes \$22.5 billion to the U.S. Treasury it structurally cannot repay. FEMA has spent roughly \$4 billion acquiring approximately 46,000 properties over 35 years, an average of \$87,000 per buyout. Another 45,000 severe repetitive loss properties remain in the pipeline. Only 24% have received any mitigation.⁴

Average annual U.S. flood damage now exceeds \$46 billion. CBO projects a 25-33% increase by 2050. The standard FEMA buyout takes 2-7 years to complete. Blue Acres compresses this to months, but still produces no housing. The opportunity cost of the status quo is not the buyout itself. It is every dollar spent on repeated disaster response that could have capitalized permanent community assets.⁴

Every buyout without a receiving-area strategy is a check written to nowhere. Blue Acres proves voluntary retreat works. The CRC ensures the destination does too.



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