Developing Green Affordable Housing Under Multiple Constraints

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The Hartland Group
Community Developers & Consultants, LLC

Hartland Group Background

- Principals came from non-profit development and social enterprise background.
- Engage in a mix of fee-based consulting and joint venture developments with non-profits.
- Familiar with tension between desire to build as energy efficiently as possible while still achieving ambitious affordability and social goals.

Affordable Housing Development Process

- Local groups identify need or opportunity.
- Connect with experienced housing non-profit and/or private development consultants.
- Conduct initial feasibility analysis.
- Pre-development financing & site control.
- Design development and permitting.
- Obtain construction & permanent financing.
- Manage bidding & construction process.
- Marketing & apt. lease-up and/or home sales.

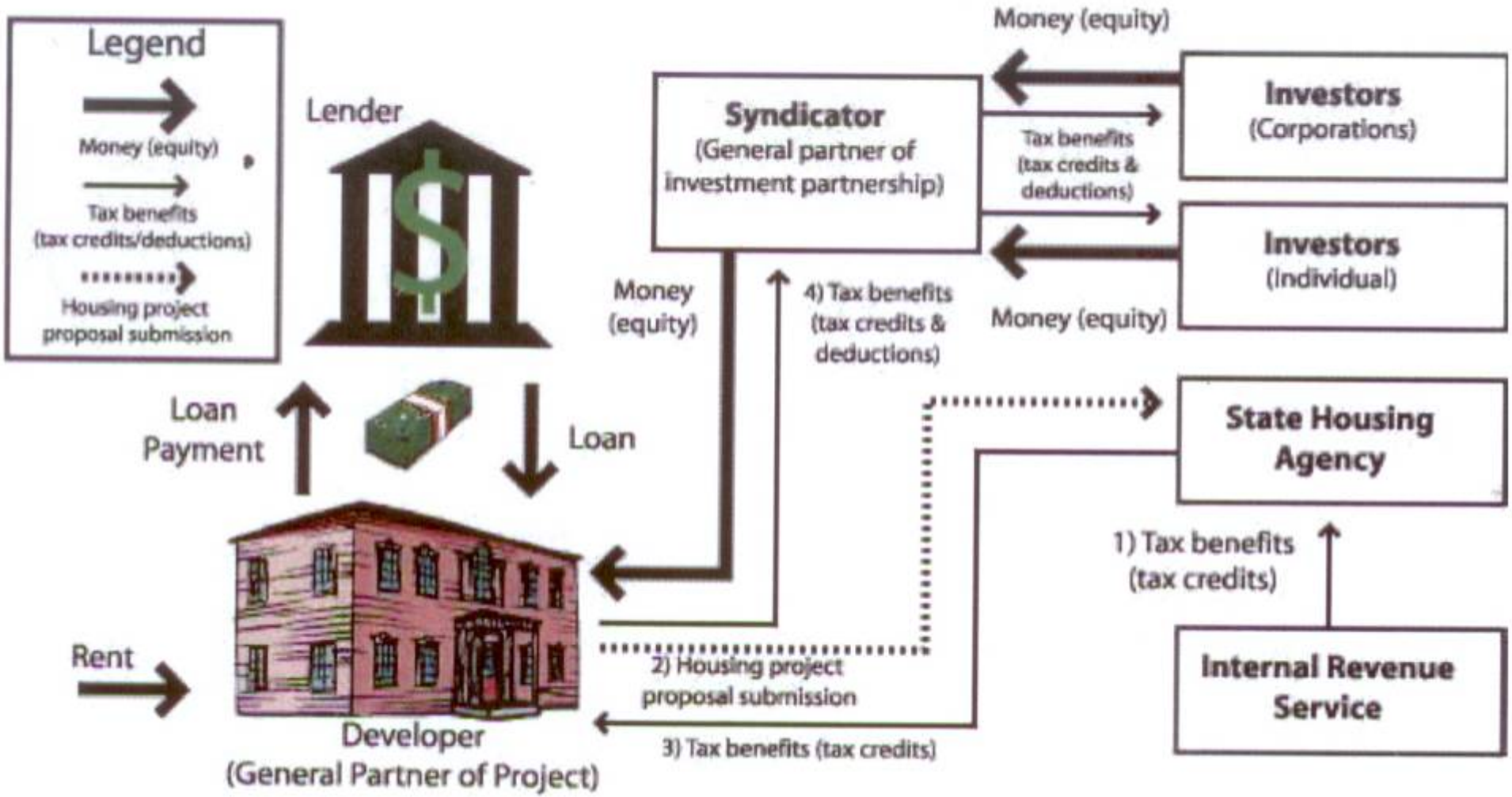
Low Income Housing Tax Credits: Key to Developing Affordable Rentals

- Created by the Tax Reform Act of 1986.
- Intended to offer investors incentive to invest in affordable rental housing.
- Provides a 10-year stream of federal tax credits in exchange for equity investment.
- Promotes affordability by minimizing debt service.
- Projects must meet occupancy and affordability criteria.
- IRS sets rules - administered by State HFAs

LIHTC Basics:

- Occupancy
  - At least 40% of the units occupied by families with incomes ≤60% of the HUD AMI.
- Affordability
  - Gross rent cannot exceed 30% of the applicable qualifying income.
- IRS requires 30-year use restriction, but States can require permanent affordability.
- Nonprofit has the right of first refusal to purchase property after initial 15-year compliance period for outstanding debt.

LIHTC Structure



Source: Adapted from U.S. General Accounting Office, Tax Credits.

Affordable Homeownership

- Limited-Equity Ownership Model Pioneered by VT Community Land Trusts (BLCT -> CHT).
- Highly dependent on down payment grants from – increasingly limited supply.
- Additional homebuyer assistance through deferred second mortgage or subsidized rates.
- Inclusionary Zoning Ordinances can also provide affordable units through cost shift onto market rate homes in the same development.

Financing Challenges:

Immediate:

- Depressed yields in the tax credit market coupled with stricter underwriting criteria for new developments.
- Limited availability of project-based rental assistance to serve very low income households.
- Commercial lending for condominium development completely froze up and is only now starting to thaw.
- Increasing pressure on State General Fund sources – particularly acute for affordable ownership projects.

Long Term:

- Concern about cuts to Federal development assistance programs over the long term due to budget pressures.
- Increasing operating costs (e.g. energy costs) reduce debt service potential & compete with resident services.

Permitting Challenges:

- Unpredictable application of zoning ordinances.
- High up-front costs to produce detailed design to secure even threshold approvals.

Promising Solutions:

- Streamlined permitting in designated growth areas.
- Additional resources for permitting authorities to expedite technical reviews and appeal process.
- Sequential permitting to track design development.

Green Building Certifications: A Tool for Benchmarking and Market Transformation

- U.S. Green Building Council's LEED Program: Leadership in Energy & Environmental Design
- LEED for Homes is the version for most housing
- U.S. EPA's EnergyStar Certification Programs
  - EnergyStar Homes
  - EnergyStar Appliances
  - EnergyStar Advanced Lighting Package
  - EnergyStar Indoor Air Package (Indoor AirPLUS)

Durability Checklist

Builder Name: The Hartland Group (Construction Manager: Trumbull-Nelson Construction Co.)
Address (Street, City, State): 299 College St, Burlington, VT 05401, Bldg 1: 2 White Pine Oval,

Site-Specific Environmental Conditions:

1. Brief Description of Site								
	Local Terrain:	☐	Flat	■	Sloped (> 25 degrees)			
	Type of Soil:	☐	Clay	■	Soil	☐	Sandy	
	Depth of Soil:	■	Few feet	☐	>10 feet			
	Depth of Ground Water :	■	Close to surface	☐	> 50 ft below surface			
	Level of Pest Threat:	■	Low	☐	Medium	☐	High	
	EPA Radon Zone	☐	Zone 1	■	Zone 2 or 3			http://www.epa.gov/iaq/radon/zonemap.html
2. Occupancy								
	Number of Bedrooms:	16			Number of Bathrooms:	12		
3. Meteorological								
	ENERGY STAR Climate Zone	N	(N, NC, SC, S)			http://www.energystar.gov/index.cfm?c=windows_doors.pr_crit_windov		
	LEED Precipitation Zone	Normal	(Normal, Dry, Wet)					
	Annual Rainfall	35.8	(Inches per year)			http://gis.ncdc.noaa.gov/website/ims-climatls/index.html		
	Average Annual Wind Speed	8.0 - 8.9	(mph)			same as above		
	Average Annual Solar Insolation	2.0 - 3.0	(KWh/M^2/SF)			http://rredc.nrel.gov/solar/old_data/nsrdb/redbook/atlas/colorpdfs/		

Risk/Problem: Uncontrolled Moisture Flow - Exterior (cont'd)	**Location in Drawings** (Detail #)	**Location in Specs.** (Page #)	**Proposed**
Foundation Solutions:			
Intended service life of foundation: 99+ Years			
Strategy #1: Drainage at Footings			
Foundation continuous footing drain with stone covered with filter fabric, drained to daylight or if necessary to drain to the interior, use a sealed sump pump system. (No pumps needed at Gile)	A3.0&.1,A4.0&.1		■
Key footing and provide capillary break over footing with damp-proofing, low perm or elastomeric paint.	A3.0&.1,A4.0&.1		■
Strategy #2: Drainage Under Basement Floors / Slab on Grade			
Provide sub-slab 4" minimum crushed stone, connect sub slab drainage to footing drain.	A3.0&.1,A4.0&.1	02200-2	■
Vapor retarder (sheet polyethylene or rigid insulation) directly under slab.	A3.0&.1,A4.0&.1	03300-4	■
Strategy #3: Foundation Walls			
Exterior of below grade foundation waterproofing	A3.0&.1,A4.0&.1	071326-4	■

Expanded Project Checklist
Version 1.11

for Homes

Builder Name: Gile Hill - Building 1 - 8 Units

Home Address (Street/City/State): 2 White Pine Oval, Hanover, New Hampshire 03755

Input Values: No of Bedrooms: 2 | Reference Home Floor Area (SF): 1430

Minimum No. of Points Required (after adjustment factor for actual unit size):

Certified	Silver	Gold	Platinum
38	53	68	83

Detailed information on the measures below are provided in the companion document "LEED for Homes Rating System"

				Pts. Achieved	Max Pts. Available
Innovation and Design Process (ID)			(Minimum of 0 ID Points Required)	5	9
Integrated Project Planning		1.1	Preliminary Rating	Y	Prerequisite
			Target performance tier: Gold		
		1.2	Integrated Project Team *(meet all of the following)*	1	1
			☑ Individuals or organizations with various capabilities		
			☑ All team members involved in various project phases		
			☑ Monthly meetings held with project team		
		1.3	Design Charrette	1	1
Quality Management for Durability		2.1	Pre-Construction Durability Planning *(meet all of the following)*	Y	Prerequisite
			☑ Durability Evaluation completed		
			☑ Strategies developed to address durability issues		
			☑ Durability strategies incorporated into project documentation		
		2.2	Wet Room Measures *(meet all of the following)*	Y	Prerequisite
			☑ Non-paper-faced backer board used		
			☑ Water-resistant flooring used in appropriate areas		
			☑ Drain and drain pan installed for any water heaters in or over living space		
			☑ Drain and drain pan installed for any washers in or over living space		
		2.3	Quality Management	Y	Prerequisite
		2.4	Third-Party Durability Inspection *(meet all of the following)*	3	3
			☑ Builder completed the Durability Inspection Checklist		
			☑ Third-party verified and checked-off on items in Durability Inspection Checklist		
Location and Linkages (LL)			(Minimum of 0 LL Points Required)	8	10
LEED-ND		1	LEED-ND Neighborhood	Not avail.	10
Site Selection		2	Site Selection *(meet all of the following)*	2	2
			☑ Not built at elevation lower than 100-year flood defined by FEMA		
			☑ Not built on land identified as habitat for any threatened or endangered species		

for Homes

Multi-family Home Complex Size Adjuster

LEED for Homes

Please insert the # of units in each building, and the average square footage for units with the corresponding bedroom number. For example, if building 1 has three 2-bedroom units that are 1300, 1400, and 1500 square feet, insert "3" in cell G10 and "1400" in cell H10. Please leave zeros or blanks where appropriate.

	0-Bedroom		1-Bedroom		2-Bedroom		3-Bedroom		4-Bedroom		5-Bedroom		Total
	# of units	Avg. ft^2	# of units	Avg. ft^2	# of units	Avg. ft^2	# of units	Avg. ft^2	# of units	Avg. ft^2	# of units	Avg. ft^2	Units
Building 1					8	969							8
Building 2													0
Building 3													0
Building 4													0
Building 5													0
Building 6													0
Building 7													0
Building 8													0

	Unit Adjustment	Unit Adjustment	Unit Adjustment	Unit Adjustment	Unit Adjustment	Unit Adjustment
Building 1			-7			0
Building 2						
Building 3						
Building 4						
Building 5						
Building 6						
Building 7						
Building 8						

	Overall Adjustment
Building 1	-7
Building 2	
Building 3	
Building 4	
Building 5	
Building 6	
Building 7	
Building 8	

Number of Buildings:	**1**
Number of Units:	**8**
Overall Community Adjustment:	**-7**

Please note, this value is not automatically entered into the checklist or expanded checklist. The Provider must enter this information manually.

ENERGY STAR Qualified Homes
Thermal Bypass Inspection Checklist

Home Address: _____ City: _____ State: _____

Thermal Bypass	Inspection Guidelines	Corrections Needed	Builder Verified	Rater Verified	N/A
1. Overall Air Barrier and Thermal Barrier Alignment	**Requirements:** Insulation shall be installed in full contact with sealed interior and exterior air barrier except for alternate to interior air barrier under item no. 2 *(Walls Adjoining Exterior Walls or Unconditioned Spaces)*				
	All Climate Zones:				
	1.1 Overall Alignment Throughout Home	☐	☐	☐	☐
	1.2 Garage Band Joist Air Barrier (at bays adjoining conditioned space)	☐	☐	☐	☐
	1.3 Attic Eave Baffles Where Vents/Leakage Exist	☐	☐	☐	☐
	Only at Climate Zones 4 and Higher:				
	1.4 Slab-edge Insulation (A maximum of 25% of the slab edge may be uninsulated in Climate Zones 4 and 5.)	☐	☐	☐	☐
	Best Practices Encouraged, Not Req'd.:				
	1.5 Air Barrier At All Band Joists (Climate Zones 4 and higher)	☐	☐	☐	☐
	1.6 Minimize Thermal Bridging (e.g., OVE framing, SIPs, ICFs)	☐	☐	☐	☐
2. Walls Adjoining Exterior Walls or Unconditioned Spaces	**Requirements:** • Fully insulated wall aligned with air barrier at both interior and exterior, **OR** • Alternate for **Climate Zones 1 thru 3**, sealed exterior air barrier aligned with RESNET Grade 1 insulation fully supported • Continuous top and bottom plates or sealed blocking				
	2.1 Wall Behind Shower/Tub	☐	☐	☐	☐
	2.2 Wall Behind Fireplace	☐	☐	☐	☐
	2.3 Insulated Attic Slopes/Walls	☐	☐	☐	☐
	2.4 Attic Knee Walls	☐	☐	☐	☐
	2.5 Skylight Shaft Walls	☐	☐	☐	☐
	2.6 Wall Adjoining Porch Roof	☐	☐	☐	☐
	2.7 Staircase Walls	☐	☐	☐	☐
	2.8 Double Walls	☐	☐	☐	☐
3. Floors between Conditioned and Exterior Spaces	**Requirements:** • Air barrier is installed at any exposed fibrous insulation edges • Insulation is installed to maintain permanent contact with sub-floor above including necessary supports (e.g., staves for blankets, netting for blown-in) • Blanket insulation is verified to have no gaps, voids or compression. • Blown-in insulation is verified to have proper density with firm packing				

Home Energy Rating Certificate

4 Gile Dr. 1A

Hanover, NH 01915

5 Stars Plus
As Built Final Rating

Uniform Energy Rating System | **Energy Efficient**

1 Star	1 Star Plus	2 Stars	2 Stars Plus	3 Stars	3 Stars Plus	4 Stars	4 Stars Plus	5 Stars	5 Stars Plus
500-401	400-301	300-251	250-201	200-151	150-101	100-91	90-86	85-71	70 or Less

HERS Index: 54

General Information

Conditioned Area:	1234 sq. ft.	HouseType:	Apartment, end unit
Conditioned Volume:	9868 cubic ft.	Foundation:	Apartment above conditioned spa
Bedrooms:	2		

Mechanical Systems Features

Heating:	Fuel-fired hydronic distribution, Propane, 93.0 AFUE.
Water Heating:	Integrated, Propane, 0.86 EF, 40.0 Gal.
Duct Leakage to Outside:	NA
Ventilation System:	Exhaust Only: 38 cfm, 21.0 watts.
Programmable Thermostat:	Heating: Yes Cooling: No

Building Shell Features

Ceiling Flat:	NA	Exposed Floor:	NA
Vaulted Ceiling:	NA	Window Type:	U:0.27, SHGC:0.30
Above Grade Walls:	R-21	**Infiltration:**	
Foundation Walls:	NA	Rate:	Htg: 615 Clg: 615 CFM50
Slab:	None	Method:	Blower door test

Lights and Appliance Features

Percent Fluorescent Pin-Based:	100.00	Clothes Dryer Fuel:	Electric
Percent Fluorescent CFL:	0.00	Range/Oven Fuel:	Electric
Refrigerator (kWh/yr):	388.00	Ceiling Fan (cfm/Watt):	0.00
Dishwasher Energy Factor:	0.70		

The Home Energy Rating Standard Disclosure for this home is available from the rating provider.

Rating Number: **46117**
Certified Energy Rater: Eric Wilder
Rating Date: 9/17/0
Rating Ordered For: Twin Pines Housing Trust

Estimated Annual Energy Cost
As Built Final Rating

Use	MMBtu	Cost	Percent
Heating	10.5	$219	21%
Cooling	0	$0	0%
Hot Water	12.0	$249	24%
Lights/Appliances	14.5	$536	51%
Photovoltaics	-0.0	$-0	-0%
Service Charges		$57	5%
Total		**$1060**	**100%**

This home meets or exceeds the minimum criteria for all of the following:

TITLE
Company
Address
City, State, Zip
Phone #
Fax #

Cost of LEED for Homes and EnergyStar Certification:

EnergyStar: $0-$350/unit multifamily, ~$500 detached

Note: Typically 100% of the EnergyStar certification cost is covered by the utility companies for affordable rental housing.

LEED for Homes Provider: $300-$500 per unit for multifamily,
$1,000 and up for detached homes

USGBC Registration Fees: ~$450-$600 per building (MF),
~$375-$525 per unit (detached)

Note: Repetition of design and sampling protocol can reduce costs significantly. Often opportunity to piggyback on utility-funded EnergyStar inspections to reduce LEED-H costs.

Grants and Incentive Programs to Defray Certification Costs

- Free EnergyStar certification and various incentives through participating Electric Utilities (not universal participation though)
- Home Depot Foundation Grants for LEED for Homes (waiver of USGBC registration fees and up to $5,000 to offset certification)
- Enterprise Foundation's Green Communities Program ($5,000 grants for Integrated Green Design Charrette)
- Efficiency Incentives – up to $1,300 per unit based on performance level (not tied to LEED certification)