

Scaling Affordable Housing Development via Technology Innovation

September 16th, 2020

Moderators:

Katelynn Harris, Senior Program and Policy Specialist for Affordable Housing Initiatives, MBA
John Paul Shaffer, AICP, Executive Director, BLDG Memphis

Panelist:

Pete Carroll, Executive, Public Policy & Industry Relations, CoreLogic



Katelynn Harris
Senior Program and Policy Specialist for Affordable Housing Initiatives
MBA



John Paul Shaffer, AICP
Executive Director
BLDG Memphis



Pete Carroll is executive, Public Policy & Industry Relations with CoreLogic. In this role, Pete directly oversees industry and public-sector engagement programs, drives enterprise strategic initiatives from CoreLogic, and expands opportunities for the company's thought leadership, insights, brand awareness, and solutions expertise within Washington, DC and across the Federal Housing Agencies and other stakeholders.

Convergence Memphis Webinar Series

The Role of Business Intelligence in Scaling the Opportunity for Affordable Housing



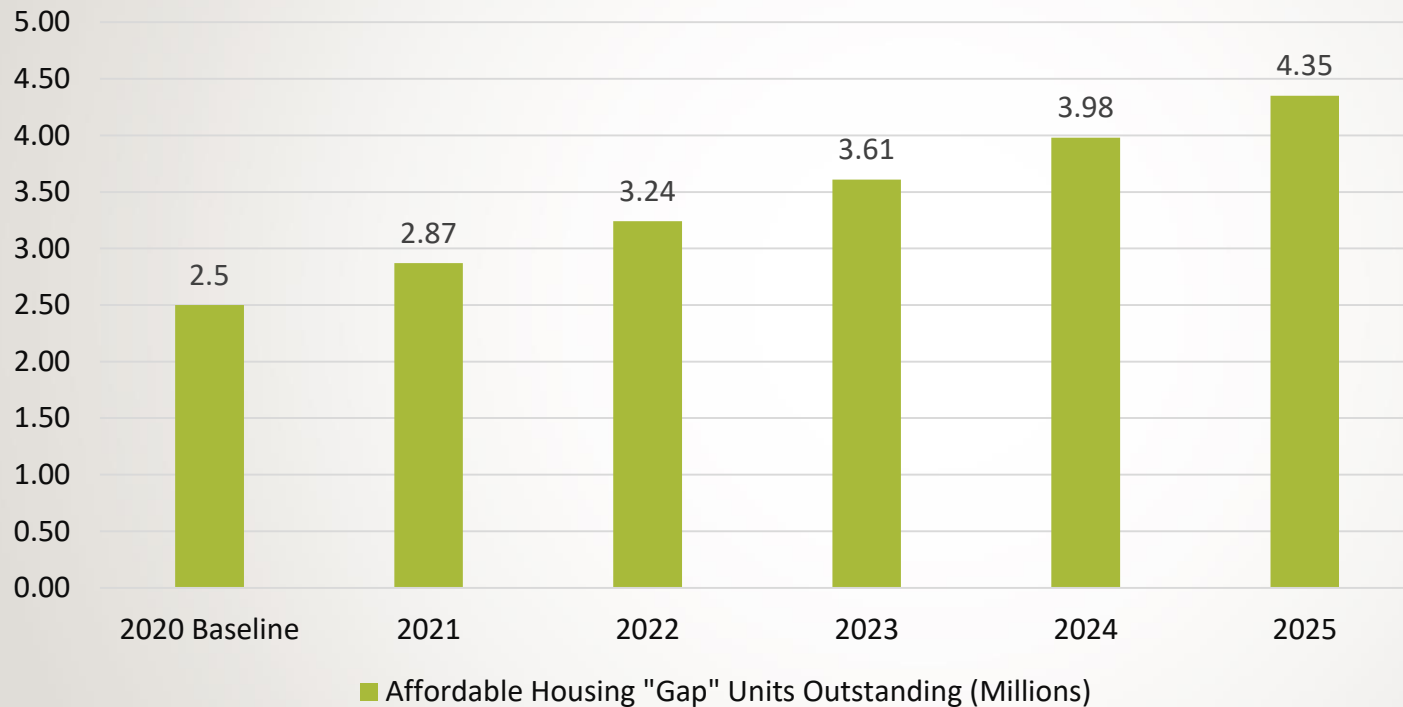
Presented by
Pete Carroll
Executive, Public Policy &
Industry Relations

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Sources of Industry Pain, Methodology, & Solution

Achieving Economies of Scale is Paramount

Affordable Housing "Gap" Units Outstanding (Millions)



Sources:

Freddie Mac, Economic & Housing Research Insight, The Major Challenges of Inadequate US Housing Supply, December 2018 (Using US Census Bureau American Community Survey (ACS) 2017 and Housing Vacancy Survey (HVS) Q2 2018, HUD, NAHB)

Harvard Joint Center for Housing Studies, Estimating the Gap in Affordable and Available Rental Units for Families, April 2019, Whitney Airgood-Obrycki & Jennifer Molinsky (Using 2017 Census Bureau American Community Survey (ACS) data)

Barriers to Affordable Housing Development

Most Issues Tend to be Local

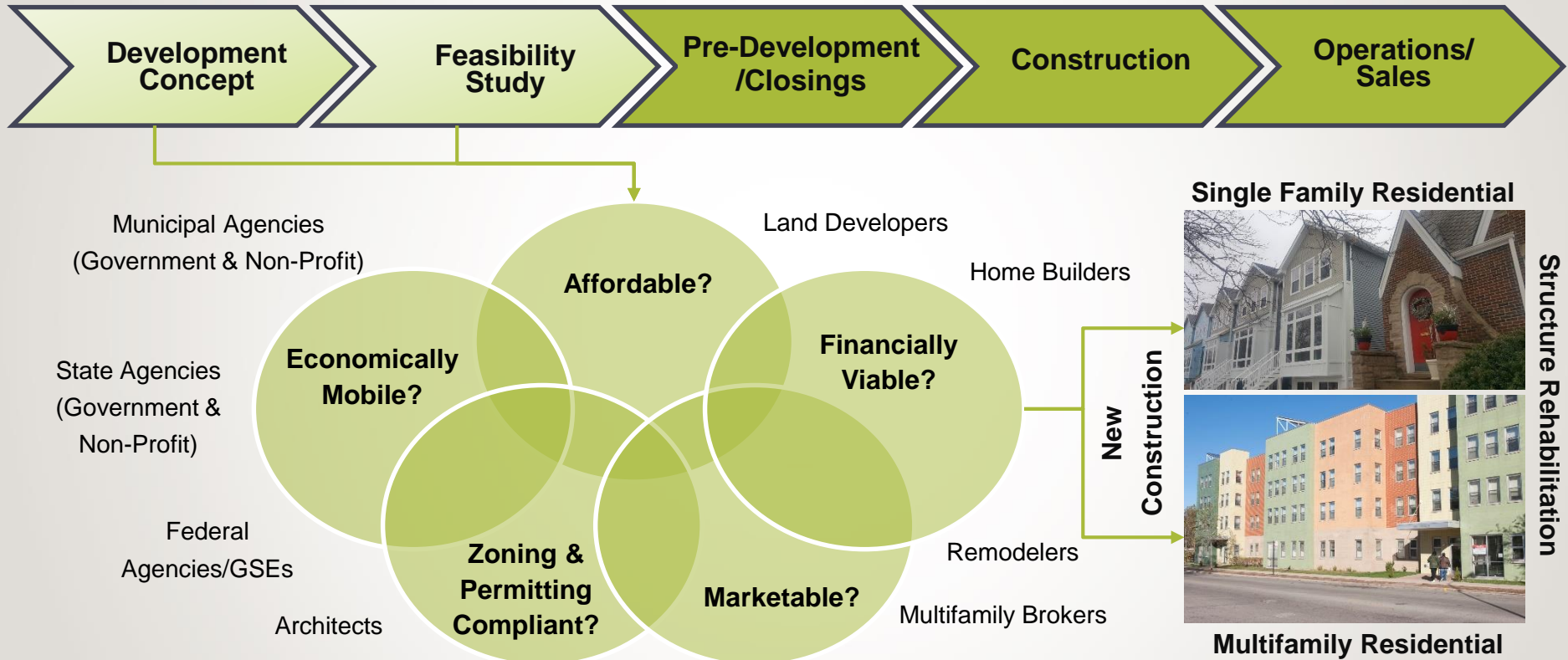
- Rising construction costs associated with labor, equipment, and materials¹
- Scarcity of buildable land and rising land acquisition costs¹
- Perception of misaligned or onerous local zoning and land use regulations²
- Lack of scale innovation in new manufacturing technologies and methods³

¹ <https://www.corelogic.com/downloadable-docs/2018-q4-corelogic-connects-frank-nothaft-presentation.pdf>

² See NAHB 2018 Special Study, “Multifamily Cost of Regulation” and “Single Family Cost of Regulation”

³ <https://www.fastcompany.com/90274920/can-new-home-building-tech-help-solve-the-affordability-crisis>

Challenge: Disconnected Siloes of Local Knowledge



Housing Development Decision Support Solution:



Imagine your brightest analyst:

- Able to instantly learn everything you know about the market
- Willing to do the tedious work to gather local knowledge
- Able to evolve and adjust their thinking over time as they learn
- And available to you 24 x 7 x 365

Decision Support Simulation Showcase¹

3373 Regal Plaza Drive
Memphis, TN 38116

¹ Using a real address selected by the Memphis 3.0 planning team, a hypothetical set of affordable housing development project assumptions were applied to the following simulation using real CoreLogic, data, analytics, and visualization techniques

Affordable Housing Development Project Simulation

Development Project Simulation Profile

Address	3373 Regal Plaza Drive, Memphis, TN, 38116
Neighborhood	Westwood/Whitehaven
Original Acreage	Roughly 8
Zoning Status	RU-3 (Single Family Attached and Detached)
Memphis 3.0 Plan Context	<ul style="list-style-type: none">• Not directly within an Anchor Community, but close to three• “BEST” property being demolished and will convey to County• Former apartment complex• Located next to single family subdivision, churches, and some large vacant parcels
Affordable Housing Development Objectives	Candidate for subdivision into new single family detached and some attached units as well

Affordable Housing Development Project Simulation

Housing Development Project Simulation Assumptions

Subdivisions

10 new parcels ranging from .5 to 3.25 acres

Project Type

Single family residential, new construction

New Affordable Housing Structure Profiles (See Appendix for Detailed Configurations)

	Parcel 1	Parcels 2-5	Parcels 6-7	Parcels 8-9	Parcel 10
Acreage	.75	.5	.5	.5	3.25
Housing Type	SFR – Det.	SFR – Det.	SFR – Det.	SFR – Att.	SFR – Att.
Home Style	Rambler	Cottage	Rambler	Duplex	Townhome
# of Units	1	1	1	2	4
Square Footage	2,100	1,500	1,850	1,350 (each)	1,650 (each)
# Bedrooms	4	2	3	2 (each)	3 (each)
# of Bathrooms	3.5	1.5	2.5	1.5 (each)	2.5 (each)

Affordability Locator - Whitehaven

Median Income by Race (past 12 mo., \$USD)

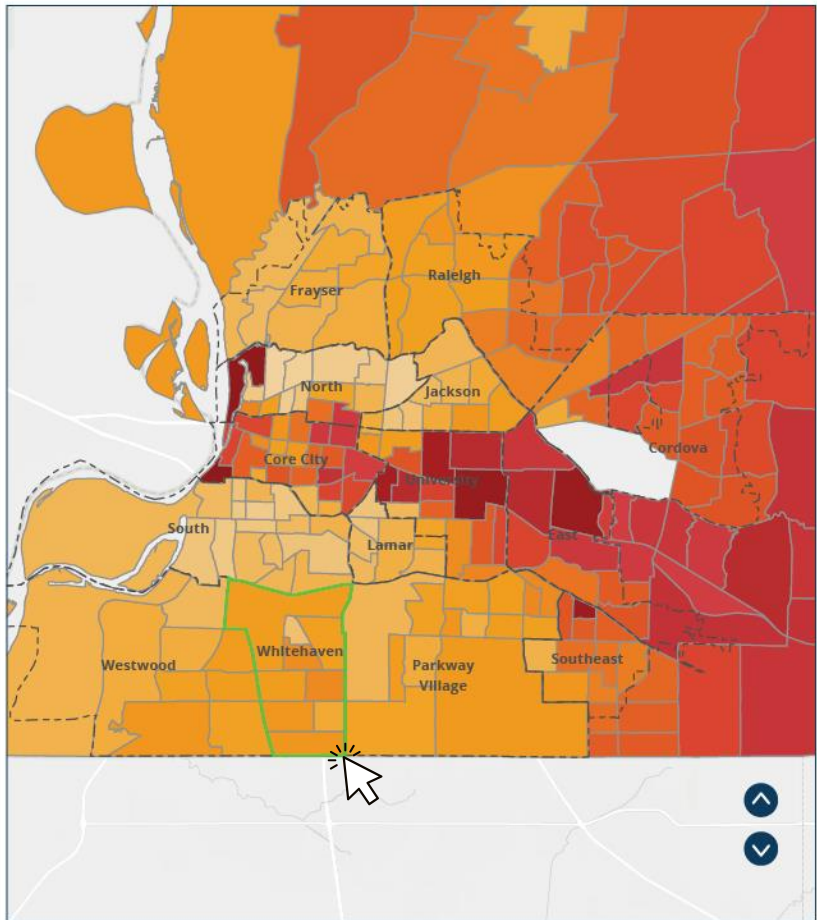
White	53,969
Black or African American	41,724
American Indian & AK Native	null
Asian	null
HI Native & Other Pacific Islander	null
Some Other Race	45,547
Two or More Races	null
White (Not Hispanic or Latino)	null
Hispanic or Latino	46,517
Total	46,939

Estimated Total Population by Race

White	1,703
Black or African American	37,138
American Indian & AK Native	101
Asian	47
HI Native & Other Pacific Islander	15
Some Other Race	406
Two or More Races	11
White (Not Hispanic or Latino)	1,101
Hispanic or Latino	929
Total	41,451

Average Market Price Per SqFt	\$45.34
--------------------------------------	----------------

Map



Boundaries
 Planning Districts
 Census Tracts
 Parcels
 Avg. Market Price per sq ft
 Planning Districts
 Census Tracts
 Parcels
 Quality Land Use
 Other Land Use
 Opportunity Zone

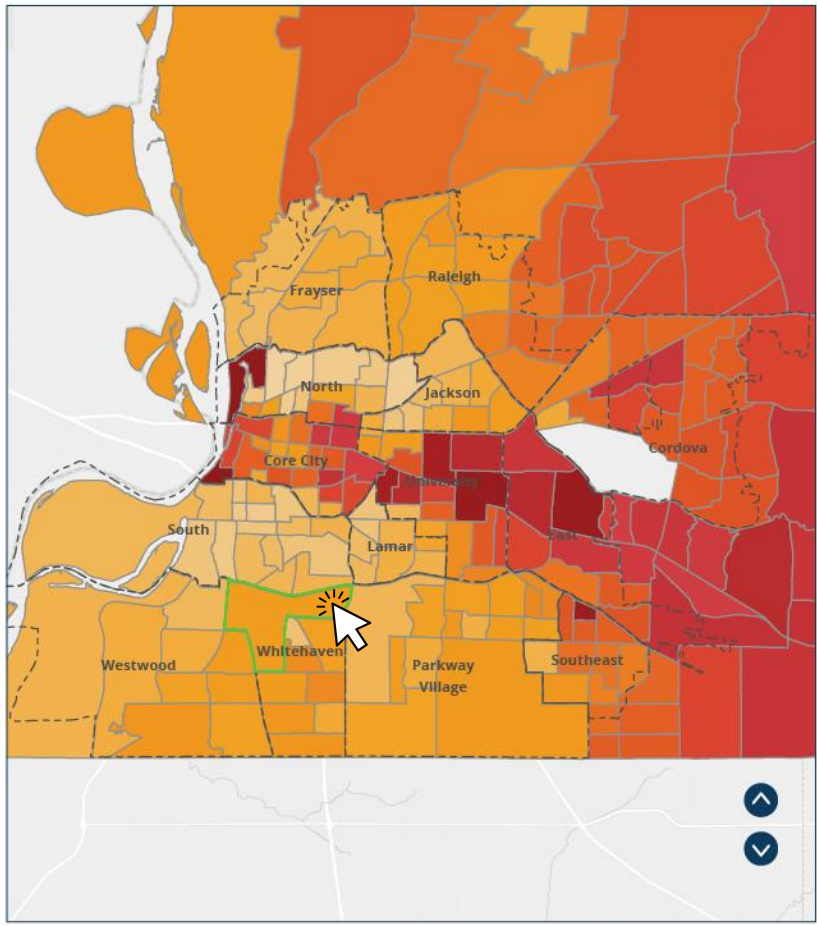
Planning Districts
 Census Tracts
 Parcels

Average Market Price per square foot
 0 170

Affordability Locator - Census Tract - 22500

Median Income by Race (past 12 mo., \$USD)	
White	null
Black or African American	34,804
American Indian & AK Native	null
Asian	null
HI Native & Other Pacific Islander	null
Some Other Race	45,547
Two or More Races	null
White (Not Hispanic or Latino)	null
Hispanic or Latino	37,679
Total	39,343
Estimated Total Population by Race	
White	812
Black or African American	4,018
American Indian & AK Native	71
Asian	0
HI Native & Other Pacific Islander	0
Some Other Race	220
Two or More Races	0
White (Not Hispanic or Latino)	278
Hispanic or Latino	801
Total	6,200
Average Market Price Per SqFt	\$47.14
In Opportunity Zone	Y

Map



- Boundaries**
 - Planning Districts
 - Census Tracts
 - Parcels
- Avg. Market Price per sq ft**
 - Planning Districts
 - Census Tracts
 - Parcels
- Quality Land Use**
- Other Land Use**
- Opportunity Zone**

- Planning Districts
- Census Tracts
- Parcels

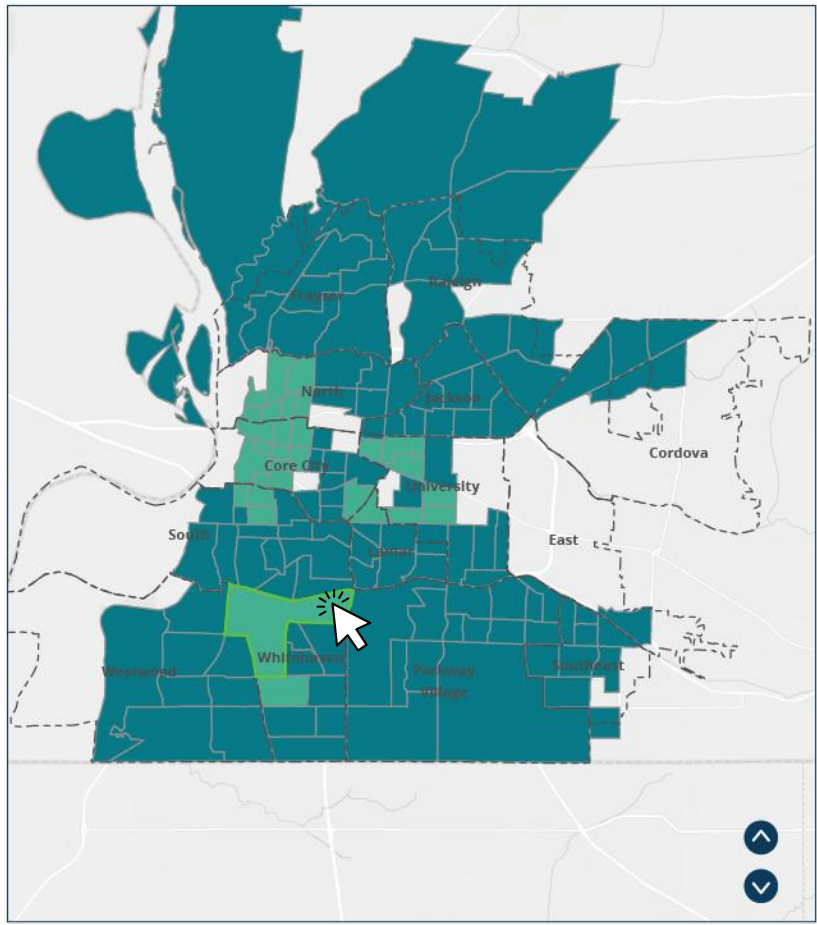
Average Market Price per square foot












Affordability Locator - Census Tract - 22500

Median Income by Race (past 12 mo., \$USD)	
White	null
Black or African American	34,804
American Indian & AK Native	null
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Map



- Boundaries**
 -  Planning Districts
 -  Census Tracts
 -  Parcels
 - Avg. Market Price per sq ft**
 - Quality Land Use**
 - Other Land Use**
 - Opportunity Zone**
 -  Census Tracts
-
-  Planning Districts
 -  Census Tracts
 -  Parcels
-
- Opportunity Zone
-  Designated
 -  Qualified

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White	null
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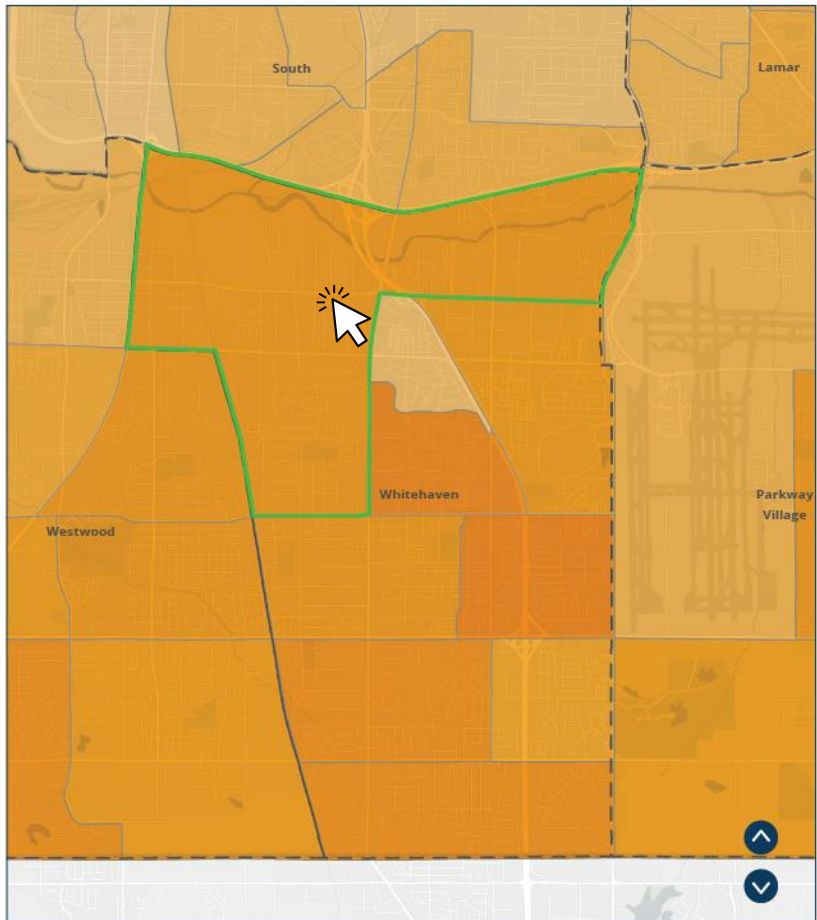
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In Opportunity Zone Y

Map



Boundaries

- Planning Districts
- Census Tracts
- Parcels

Avg. Market Price per sq ft

- Planning Districts
- Census Tracts
- Parcels

Quality Land Use

Other Land Use

Opportunity Zone

--- Planning Districts

□ Census Tracts

□ Parcels

Average Market Price per square foot

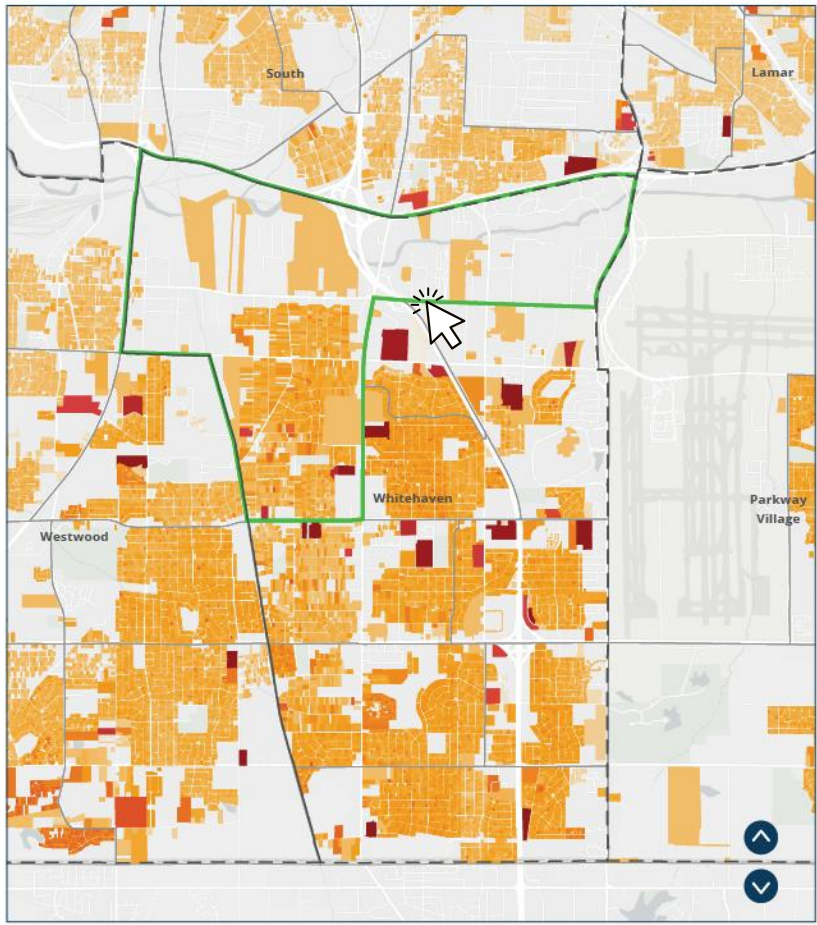


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Affordability Locator - Census Tract - 22500

Median Income by Race (past 12 mo., \$USD)	
White	null
Black or African American	34,804
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Map



Boundaries

- Planning Districts
- Census Tracts
- Parcels

Avg. Market Price per sq ft

- Planning Districts
- Census Tracts
- Parcels

Quality Land Use

Other Land Use

Opportunity Zone

--- Planning Districts

□ Census Tracts

□ Parcels

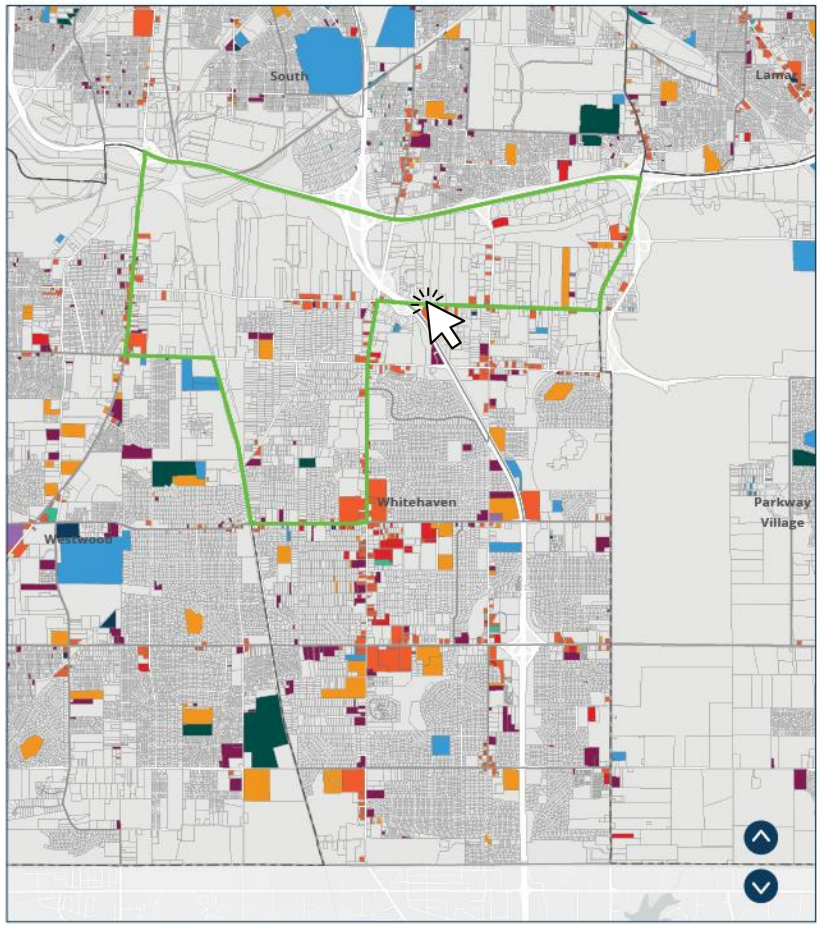
Average Market Price per square foot

0 ————— >170

Land Use Quality - Census Tract - 22500

Median Income by Race (past 12 mo., \$USD)	
White	null
Black or African American	34,804
American Indian & AK Native	null
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Map



- Boundaries**
 - Planning Districts
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 - Parcels
- Avg. Market Price per sq ft**
- Quality Land Use**
 - Parcels
- Other Land Use**
- Opportunity Zone**

- Planning Districts
- Census Tracts
- Parcels

Quality Land Use

- Church/Religious
- Arts and Culture
- Education
- Hospital/Medical
- Parks and Recreation
- Federal/State/Local Land
- Police/Fire/Civil Defense
- Public Transit
- Retail/Commerce
- Supermarket
- Other

CoreLogic Highest & Best Use Simulator

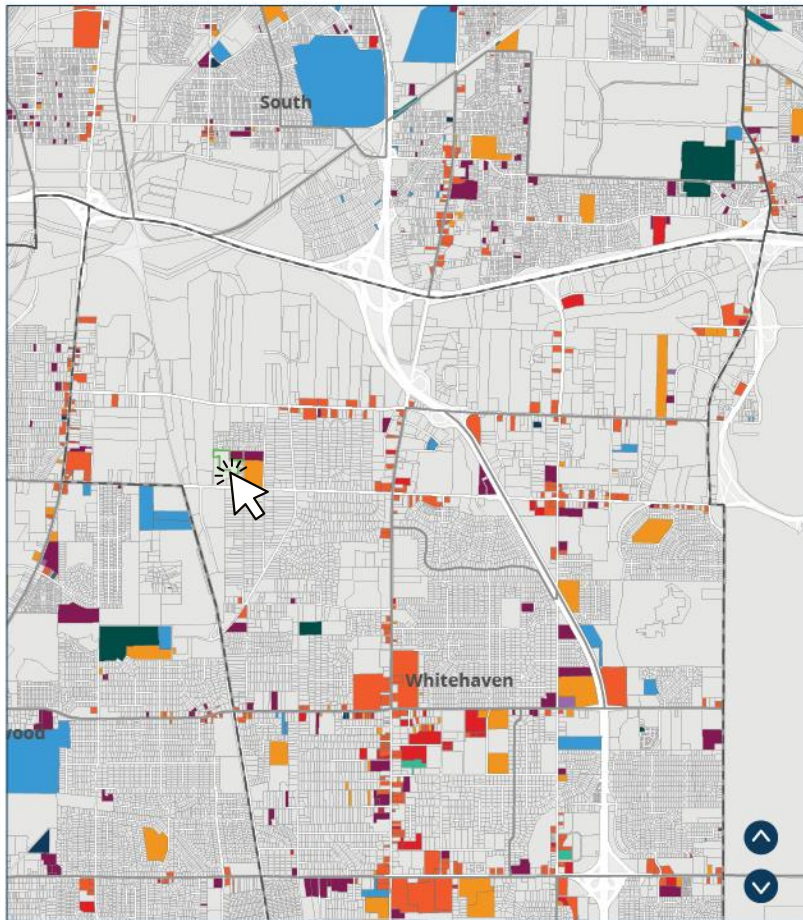
Affordability Locator

Land Use Quality

Parcel Suitability

HABEAS Simulator

Data Sources



- ✓ **Boundaries**
 - Planning Districts
 - Census Tracts
 - Parcels
- > **Avg. Market Price per sq ft**
- ✓ **Quality Land Use**
 - Parcels
- > **Other Land Use**
- > **Opportunity Zone**

- Planning Districts
- Census Tracts
- Parcels

- Quality Land Use
- Church/Religious
 - Arts and Culture
 - Education
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CoreLogic
Highest & Best
Use Simulator

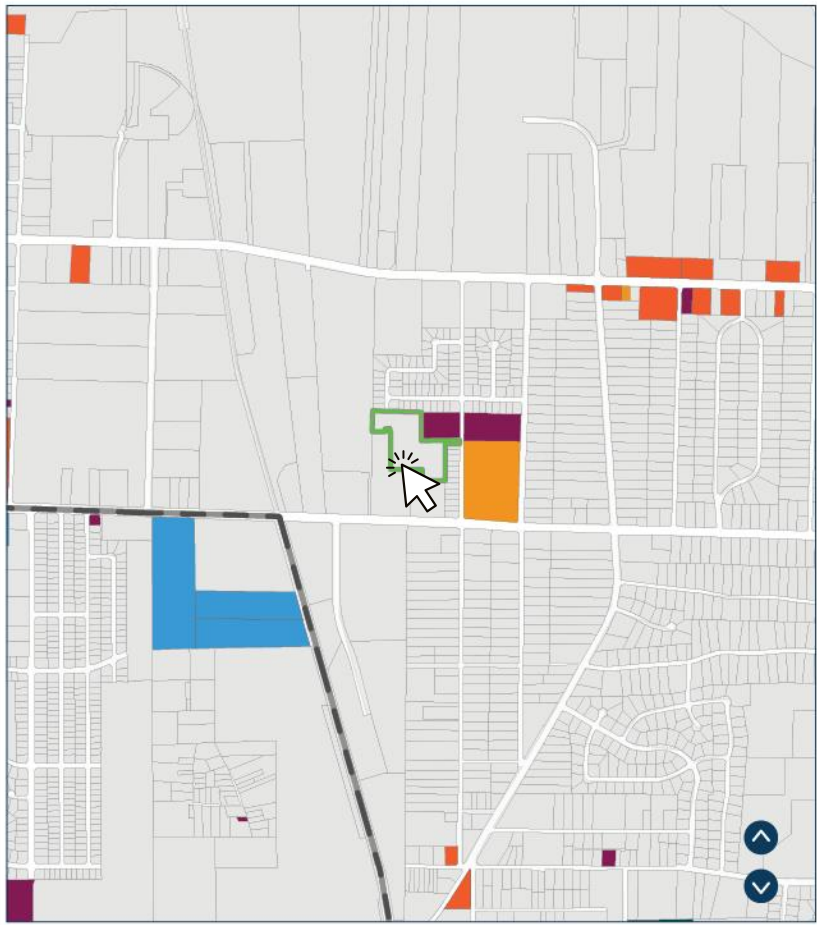
- Affordability Locator
- Land Use Quality
- Parcel Suitability
- HABEAS Simulator
- Data Sources

Parcel Suitability

Address	3373 Regal Plaza Dr
Land Use	Single Family Residential
Buildability Score	61
Market Price Per Sq Ft	\$65.31
In Opportunity Zone	Y

See More

Map



- Boundaries
 - Planning Districts
 - Census Tracts
 - Parcels
 - Avg. Market Price per sq ft
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CoreLogic
Highest & Best
Use Simulator

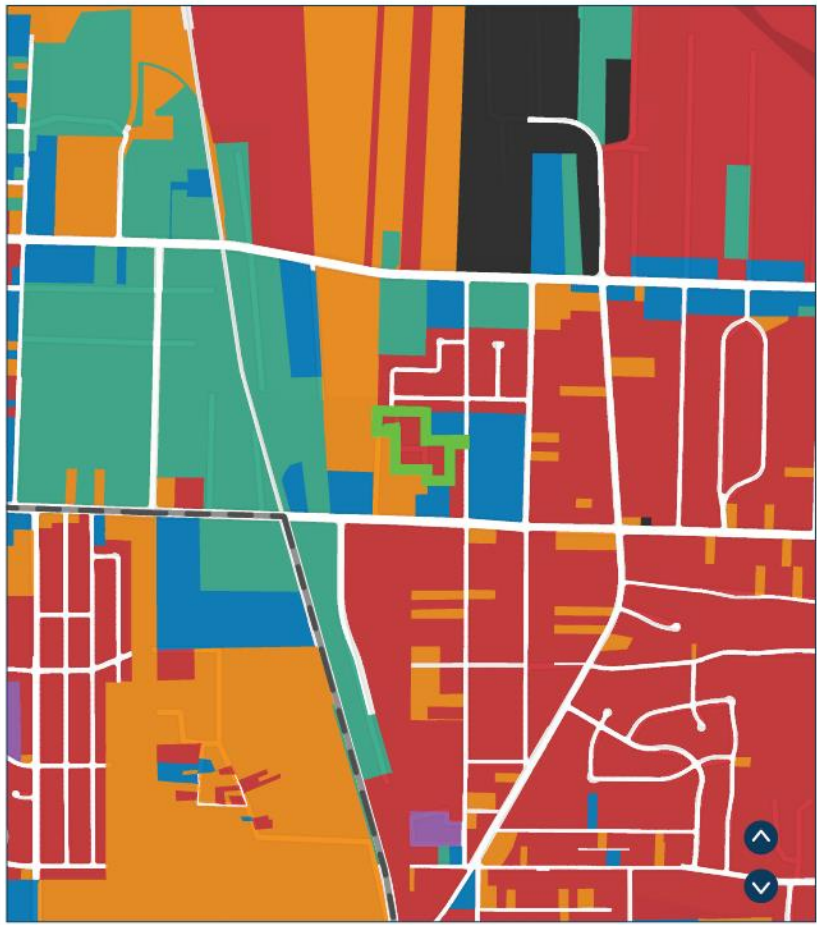
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Map



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 - Parcels
 - Avg. Market Price per sq ft
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 - Other Land Use
 - Parcels
 - Opportunity Zone
-
- Planning Districts
 - Census Tracts
 - Parcels
-
- Other Land Use
- Commercial
 - Single Family Residential
 - Multifamily Residential
 - Industrial
 - Vacant
 - Other

Parcel Suitability

Parcel Address Information

CoreLogic Zoning Status	Single Family Residential
Formatted APN	07-7001-0-0047
Address	3373 Regal Plaza Dr
City	Memphis
State	TN
Zip Code	38116
Land Use	TOWNHOUSE/ROWHOUSE
Mobile Home Indicator	N
Zoning	RU-3

Parcel Owner Information

Owner Corporate Indicator	Yes
Owner Last Name 1	Avalon Holdings LLC
Owner First Name and Middle 1	-
Owner Last Name 2	-
Mail House Number	PO Box 540164
Mail House Number 2	-
Mail House Number Suffix	-
Mail City	Lake Worth
Mail State	FL
Mail Zip Code	33454
Mailing Opt Out Code	-

Parcel Last Sale Information

Document Type	Special Warranty Deed
Recording Date	08/04/1992
Seller Name	Owner Record
Title Company Name	-

Parcel Land Information

Front Footage	-
Depth Footage	-
Acres	8.00
Land Square Footage	348,480
Lot Area (Alpha)	-

Parcel Valuation Information

Total Value Calculated	\$120,000
Land Value Calculated	\$120,000
Improvement Value Calculated	0
Total Value Calculated Indicator	Assessor
Land Value Calculated Indicator	Assessor
Tax Amount	\$14,491
Assessed Year	2019

Enter the following information describing the overall development project

Est. Timeline - Land Acquisition (Months)	3
Est. Timeline - Development & Construction (Months)	8
Type of Financing - Land Acquisition	A&D Loan
Financed Interest Rate	9.00%
Down Payment	20%
Origination Fee	1%
Type of Financing - Development & Construction	Construction Loan
Financed Interest Rate	7.000%
Down Payment	20%
Origination Fee	1%

Select all applicable permitting requirements for the overall development project

Zoning Change:	No
Planned Development Review:	No
Sub-Division Review:	Yes
Right-of-Way Vacation:	No
Plat of Record Revocation:	Yes
Special District Administrative Site Plan Review:	No
Sign Permit:	No
Certificate of Occupancy:	No
Administrative Deviation:	No
Variance:	No

Add a property (single parcel/structure) to the development project

Land acreage	0.75
Development Type	New Construction
Project Type	Single Family Residential
Number of Units	1
Square Footage	2100
Year Built	2020
Home Style	Rambler
Number of Bedrooms	4
Number of Bathrooms	3
Check Opportunity Zone Eligible?	Y
Calculate LIHTC Revenue Cap?	Y

Added Properties

2020-1-0001	Remove <input type="checkbox"/>
2020-1-0002	Remove <input type="checkbox"/>

ADD

Run HABEAS





HABEAS Simulator Results

Development Project Summary	Amounts
Land Acquisition Costs	\$120,000
Development & Construction Costs	\$2,559,492
Permit Application Fees	\$2,225
Based on Minimum Permitting Timeline	
Acquisition Phase Interest Costs	\$2,181
Development/Construction Phase Interest Costs	\$115,452
Property Taxes	\$14,491
Based on Median Permitting Timeline	
Acquisition Phase Interest Costs	\$5,816
Development/Construction Phase Interest Costs	\$115,452
Property Taxes	\$20,529
Total Development Project Costs - Minimum Permitting Timeline	\$2,813,841
Total Development Project Costs - Median Permitting Timeline	\$2,823,514
Total Market Sale Value	\$3,207,300
Total Annual Market Rent Value	\$205,500

Add/Remove

Added Properties	
2020-1-0001	<input type="radio"/>
2020-1-0002	<input checked="" type="radio"/>
2020-1-0003	<input type="radio"/>
2020-1-0004	<input type="radio"/>
2020-1-0005	<input type="radio"/>
2020-1-0006	<input checked="" type="radio"/>
2020-1-0007	<input type="radio"/>
2020-1-0008	<input type="radio"/>
2020-1-0009	<input type="radio"/>
2020-1-0010	<input checked="" type="radio"/>

Compare



Note: Site work assumes that the development project can avail the current parcel's existing road access points, utilities, water, sewage, etc.

HABEAS Simulator Parcel 1

Scenario Inputs/Assumptions

Scenario ID	2020-1-0001	# Units	1	# Bedrooms	4
Formatted APN	TBD	Sq. Footage	2100	# Bathrooms	3
Construction Type	Single Family Residential	Year Built	2020	Opportunity Zone	Y*
Project Type	New Construction	Home Style	Rambler	LIHTC	N

Scenario Cost Estimates

Development Cost Categories	Labor	Equipment/Misc.	Material	Total
Site Preparation & Work	\$-	\$-	\$-	\$9,349
Foundations	\$5,339	\$207	\$4,272	\$9,818
Exterior	\$39,580	\$697	\$56,719	\$96,996
Interior	\$17,784	\$21	\$16,633	\$34,438
Mechanicals	\$24,464	\$	\$46,697	\$71,161
Attached Structures	\$1,597	\$-	\$2,873	\$4,470
Detached Structures	\$-	\$-	\$-	\$-
Finished Basement	\$-	\$-	\$-	\$-
General Conditions	\$-	\$10,620	\$-	\$10,620
Debris Removal	\$-	\$-	\$-	\$-
Local Building Codes	\$-	\$-	\$-	\$-
Subtotal - Development Costs	\$88,764	\$11,545	\$127,194	\$236,852

Development Cost Subtotals Cost

Land Acquisition	\$11,250
Development Costs	\$236,852
Total Costs	\$248,102

Revenue Considerations

Market Value (Sale)	\$230,000
Market Value (Annual Rent)	\$27,540
Opportunity Zone Eligible?	Y*
LIHTC Annual Rents Cap	Not Eligible

**Property must be held for a minimum of 7 years to realize capital gains tax discount.*

Affordability Locator

Land Use Quality

Parcel Suitability

HABEAS Simulator

Input

Results

Parcel 1

Parcel 2-5

Parcel 6-7

Parcel 8-9

Parcel 10

Permit Fee Time

Comparison

Data Sources





HABEAS Simulator Permitting Requirements, Application Fees, and Timeline-Related Financing Costs

Financing Factors by Project Phase	Acquisition	Development/Construction
Required Investment Capital	\$120,000	\$2,600,000
Required Down payment (%)	20%	20%
Down Payment (\$)	\$24,000	\$520,000
Origination Fee (%) Capitalized in Loan Balance	1%	1%
Acq. Phase Loan Amount Rolled Into Dev/Con Loan	\$96,000	\$2,176,960
Origination Fee (\$)	\$960	\$21,770
Capitalized Loan Amount	\$96,960	\$2,198,730

Required Permits - Application Fees	Amount
Major Subdivision Preliminary Plan Review	\$1,925
Plat of Record Revocation	\$300
Total Permit Application Fees	\$2,225

Required Permits - Timeline and Related Costs	Minimum	Median
Acquisition Phase Timeline (Months)	3	8
Construction Phase Timeline (Months)	9	8
Market Sale/Closing Timeline (Months)	1	1
Permit - Sub-Division Review Timeline (Months)	3	8
Permit - Plat of Record Revocation Timeline (Months)	2	7
Permitting - Length of Delay (Months)	0	3
Acquisition Phase - Interest Only	\$2,181	\$5,816
Development & Construction Phase - Interest Only	\$115,452	\$115,452
Property Taxes	\$14,491	\$20,529
Permitting Timeline-Related Interest and Property Tax Costs	\$132,124	\$141,797
Cost of Permitting Delay (Minimum vs. Median Timeline)	\$9,673	

Key Scenario Inputs/Assumptions	Scenario ID		
	2020-1-0002	2020-1-0006	2020-1-0010
Construction Type	Single Family Residential	Single Family Residential	Single Family Residential
Project Type	New Construction	New Construction	New Construction
Formatted APN	TBD	TBD	TBD
Zoning	RU-3	RU-3	RU-3
Land Use	SFR	SFR	SFR
Condition	Builder Grade	Builder Grade	Builder Grade
Number of Units	1	1	2
Number of Bedrooms	2	3	4
Number of Bathrooms	1.5	2.5	3
Home Style	Cottage	Rambler	Duplex
Check if Opportunity Zone Eligible?	Y*	Y*	Y*
Calculate LIHTC Annual Rent Cap?	Y	Y	Y

Required Permits - Timeline and Related Costs			
Site Preparation & Work	\$9,074	\$9,215	\$9,600
Foundations	\$7,077	\$9,212	\$9,745
Exterior	\$73,734	\$87,600	\$118,493
Interior	\$22,440	\$28,533	\$36,861
Mechanicals	\$50,257	\$59,762	\$93,632
Attached Structures	\$-	\$4,418	\$-
Detached Structures	\$-	\$-	\$-
Finished Basement	\$-	\$-	\$-
General Conditions	\$7,110	\$8,717	\$13,764
Debris Removal	\$-	\$-	\$-



Affordability Locator

Land Use Quality

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HABEAS Simulator

Input

Results

Parcel 1

Parcel 2-5

Parcel 6-7

Parcel 8-9

Parcel 10

Permit Fee Time

Comparison

Data Sources



HABEAS Simulator Comparison

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Check if Opportunity Zone Eligible?	Y*	Y*	Y*
Calculate LIHTC Annual Rent Cap?	Y	Y	Y
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Detached Structures	\$-	\$-	\$-
Finished Basement	\$-	\$-	\$-
General Conditions	\$7,110	\$8,717	\$13,764
Debris Removal	\$-	\$-	\$-
Local Building Codes	\$-	\$-	\$-
Development Costs	\$169,692	\$207,457	\$282,095
Revenue Considerations			
Market Value (Sale)	\$168,277	\$237,351	\$336,554
Market Value (Annual Rent)	\$13,800	\$15,660	\$27,600
Opportunity Zone Eligible?	Y*	Y*	Y*
LIHTC Annual Rents Cap (Per Unit)	Not Eligible	Not Eligible	Not Eligible

*Property must be held for a minimum of 7 years to realize capital gains tax discount.



Affordability Locator

Land Use Quality

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HABEAS Simulator

Input

Results

Parcel 1

Parcel 2-5

Parcel 6-7

Parcel 8-9

Parcel 10

Permit Fee Time

Comparison

Data Sources



Appendix:
New Affordable Housing Structure Profiles
Detailed Configurations

Affordable Housing Structures: Detailed Configurations

Structure Configuration Details¹:

Site Work	<ul style="list-style-type: none">• Concrete Driveways (All Structures, Except Townhome)• Concrete Sidewalks (All Structures)• Landscaping (All Structures)• Wrought-Iron Gates (for Townhome)• Attached Garages (for Detached and Duplex)• Parking Lot (for Townhome)
Construction Materials	<ul style="list-style-type: none">• Standard/Builder's Grade Materials• Zip-Code Level Specificity in Land, Materials, & Equipment

¹ Assumes new structure designs conform to Shelby County Zoning and Land Use Ordinance. While required site work and local building codes are accounted for in cost estimates, we assume new structures can avail existing road access points, utilities, water, sewage, and other public works.

Affordable Housing Structures: Detailed Configurations

Structure Configuration Details:

Construction Configurations

- Kitchen
- Beds/Baths
- HVAC Systems
- Floor Coverings
- Wall Coverings
- Ceiling Material
- Interior Wall Material
- Doors
- Staircases
- Roof (Slope, Cover, Shape)
- Exterior Walls
- Windows
- Exterior Wall Framing
- Interior Wall Framing
- Roof Structure
- Floor/Ceiling Structure
- Electrical & Wiring
- Foundation

Data Sources and Contact Information

For more information on the CoreLogic Affordable Housing Solutions and related data, contact:

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Data Sources included in our analysis can be found at www.corelogic.com

RCT Express (Construction Cost Data)

<https://www.corelogic.com/products/rct-express.aspx>

RealQuest (Property-Level Data)

<https://www.corelogic.com/products/realquest.aspx>

Multiple Listing Services (MLS) data (Market sale/rent comps)

<https://www.corelogic.com/solutions/multiple-listing-technology.aspx>

Location Information Solutions (Parcel/geospatial data)

<https://www.corelogic.com/solutions/location-information-solutions.aspx>

CoreLogic Valuation Services (Appraisal, AVM, Desk Review)

<https://www.corelogic.com/solutions/valuation-services.aspx>

U.S. Census Bureau

2014-2018 American Community Survey 5-Year Estimates

<https://www.census.gov>

The Memphis & Shelby County Unified Development Code

<https://shelbycountyttn.gov/DocumentCenter/View/35104/ZTA-19-1-complete-document-6---for-printing>

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