Making Green Housing Pencil Out

Molly McCabe  
President  
|Founder  
HaydenTanner  
Co-Founder  
The Lotus Campaign

Philip Payne  
CEO  
Gingko Residential  
The Lotus Campaign

Matt Birenbaum  
Chief Investment Officer  
AvalonBay

Nathan Taft  
Managing Director  
Jonathan Rose  
Companies
# AvalonBay at a Glance

<table>
<thead>
<tr>
<th></th>
<th>$31B</th>
<th>291</th>
<th>20</th>
<th>$2.4B</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Enterprise Value</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Apartment Communities</strong></td>
<td></td>
<td></td>
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<tr>
<td><strong>U.S. Markets</strong></td>
<td></td>
<td></td>
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<tr>
<td><strong>Under Construction</strong> (1)</td>
<td></td>
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</tbody>
</table>

## Annualized Total Shareholder Return Since IPO

12.9%

## Annualized Dividend Growth Since IPO

5.2%

### AvalonBay is an Equity REIT in the Business of
Developing, Redeveloping, Acquiring, and Managing
Apartment Communities in Leading Metropolitan Areas
Primarily in New England, The New York / New Jersey
Metro Area, The Mid-Atlantic, The Pacific Northwest,
and Northern and Southern California

### S&P 500 Company

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Source: Company reports.
Data as of December 31, 2018
Initial public offering (IPO) occurred on November 11, 1993.
Total shareholder return calculated as the change in the value of the period stated with all dividends reinvested.
Dividend growth includes AVN & BYA dividends prior to merger.
(1) Excludes projected Total Capital Cost for 15 West 61st Street of $620 million.
(2) Includes 2019 dividend increase.

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About AvalonBay
OPERATING A HIGH-QUALITY, DIVERSE PORTFOLIO...

AVON HUNTINGTON STATION
HUNTINGTON STATION, NY

AVA WHEATON
SILVER SPRING, MD

AVON NORTH STATION
BOSTON, MA

EAVES RANCHO PENASQUITOS
SAN DIEGO, CA

AVON WEST HOLLYWOOD
HOLLYWOOD, CA

AVA 55 NINTH
SAN FRANCISCO, CA

The Company defines urban submarkets as those with more than 3,500 households per square mile; all other submarkets are considered suburban.

AVERAGE COMMUNITY AGE = 20 YEARS
URBAN | SUBURBAN MIX = 36% | 64%
**AvalonBay Sustainability Initiatives**

**Leadership**
- Announced we will establish a Science-Based Emissions Reduction Target in 2019.
- Analyzing our portfolio for climate-related change, risk and opportunity.

**Innovation**
- Supporting City strategies to decarbonize.
- Planning for NetZero design and construction.
- Connecting the dots between demand management, solar and battery technologies.

**Demand & Consumption Reduction**
- **Solar:** Installing over 5 megawatts of solar across 40 communities with an investment of $19M+.
- **LED lighting:** $10M+ invested across 150 communities generating savings of $2.3M annually.
- **Demand Management:** Participating in demand response programs in 6 AVB markets.
Rose Affordable Housing Preservation Fund IV, L.P.

*Urban Land Institute: Nashville Spring Meeting*

*April 17, 2019*
• Founded in 1989, Rose Companies is a leading developer and investor in sustainable, affordable, and mixed-income multi-family real estate in the U.S.

• Named the largest acquirer of affordable housing properties, and the tenth largest owner of affordable housing in the U.S. in 2017

• Fully integrated real estate company, with in-house acquisitions, development, construction management, and property management

• SEC-Registered Investment Adviser with 14 years of fund management experience and $1.1B in AUM from foundations, family offices and institutional investment partners

Via Verde, Bronx, NY
New Business Center
New Fitness Center
Updated ADA Bathrooms
Exterior
Jonathan Rose Companies
Miramar Towers, Los Angeles, CA
New Common Room
Jonathan Rose Companies – Our Impacts

Property Portfolio Across the U.S.A.

15,000+
Residential Units Across 18 States and D.C.

12 million+
Square Feet

13,000+
Affordable Units

Communities of Opportunity
Through an integrated hands-on and local approach, we work to direct resources and expertise to increase the supply of safe, green and affordable housing communities.

Environmental Sustainability
Through conservation measures, renewable energy generation and green building certifications, we look for creative and holistic ways to reduce our impact on the environment.
Goals of our national preservation strategy:

1. Acquire and preserve affordable, mixed-income and workforce multifamily housing

2. Implement practical green strategies to reduce costs and increase efficiency

3. Increase opportunity for its residents through social and educational services
Climate Change Mitigation Goals

Jonathan Rose Companies has established the following environmental goals to uphold our commitment to climate action:

**Greenhouse Gas Reduction**
We design, construct, retrofit and operate properties to minimize their emissions of greenhouse and ozone-depleting gases. We are committed to both mitigation through reducing emissions and adapting to our changing environment.

**Goal**
Reduce carbon dioxide equivalent (CO2e) emissions intensity by 20% or more from baseline year* levels within 10 years.

**Water Reduction**
We design, construct, retrofit and operate properties to make the most efficient use of water resources, minimize consumption and reduce adverse effects on water infrastructure systems.

**Goal**
Reduce water intensity by 15% compared to baseline year.*

**Energy Reduction**
We design, construct, retrofit, and operate properties using strategies to reduce energy use including integrated design, efficiency improvements, conservation measures and optimized operations.

**Goal**
Reduce energy intensity by 20% compared to baseline year.*

**Waste Reduction**
We design, construct, retrofit and operate properties to minimize waste sent to landfills. We aim to design waste out of our processes and to divert landfill waste through recycling and composting.

**Goal**
Increase the amount of waste diverted from landfills by 15% from baseline year.*
9 Enterprize Green Communities Certifications
15 LEED Certifications
7 UN Sustainable Development Goal Commitments
3 Green Point Rated Certified Properties

Climate Mitigation Goals

- 87% of Units Affordable
- Reduce energy intensity by 20%
- 12 Communities of Opportunity Pilot Properties
- Reduce Greenhouse Gas Emissions by 20%
- 31 Voter Registration Events Held in Seven States
- Reduce water intensity by 15%
- 20,000+ Meals Delivered to Underserved Residents
- Increase the amount of waste diverted from landfills by 15%
<table>
<thead>
<tr>
<th>SDG</th>
<th>OUR APPROACH</th>
<th>OUR ACTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SDG 3</td>
<td><strong>Promote healthy living at all Jonathan Rose Companies properties.</strong></td>
<td>• Provide all residents education on safety, nutrition and healthcare through the Communities of Opportunity Program&lt;br&gt;• Provide fitness facilities and organize exercise programming like yoga, walking and dance&lt;br&gt;• Facilitate on-site health screenings and exam space&lt;br&gt;• Improve indoor air quality with ventilation and healthy building materials</td>
</tr>
<tr>
<td>SDG 4</td>
<td><strong>Increase the number of residents, both youth and adults, who have relevant skills for employment and ensure that all youth and adults achieve literacy and numeracy.</strong></td>
<td>• Connect residents with community centers and local education programs&lt;br&gt;• Host educational programs at all properties</td>
</tr>
<tr>
<td>SDG 7</td>
<td><strong>Procure green power for all properties, when feasible and reduce energy demand through efficiency and conservation.</strong></td>
<td>• Reduce energy consumption through conservation measures&lt;br&gt;• Install solar panels and other renewable sources of energy on-site&lt;br&gt;• Purchase renewable energy credits to offset energy usage</td>
</tr>
<tr>
<td>SDG 11</td>
<td><strong>Provide safe and affordable housing, access to safe and inclusive green spaces, and reduce the adverse environmental impacts of cities.</strong></td>
<td>• Preserve affordable housing for the long term&lt;br&gt;• Acquire and develop properties with appropriate urban density&lt;br&gt;• Support public policy that improves environmental conditions locally&lt;br&gt;• Design green and open space to facilitate access to nature</td>
</tr>
<tr>
<td>SDG 12</td>
<td><strong>Minimize negative environmental impacts by reducing waste through recycling and implementing sustainable procurement practices.</strong></td>
<td>• Reduce waste generation through responsible procurement and operations, including a shared community goods library&lt;br&gt;• Implement and optimize recycling and compost programs&lt;br&gt;• Select products with minimal use of toxic chemicals and facilitate responsible disposal of hazardous materials</td>
</tr>
<tr>
<td>SDG 13</td>
<td><strong>Reduce energy, emissions and water intensity at all properties and strengthen resiliency against future climate impacts.</strong></td>
<td>• Set goals to achieve energy, water and emissions savings and implement strategies and plans to achieve them&lt;br&gt;• Reduce site-level fossil fuel consumption by implementing electrification and on-site renewable generation&lt;br&gt;• Assess current and future climate risk at all properties and implement strategies to improve resilience</td>
</tr>
<tr>
<td>SDG 17</td>
<td><strong>Encourage and promote public, public-private and civil society partnerships to build strategic relationships and expand reach.</strong></td>
<td>• Partner with local and national agencies to enhance the affordable housing market&lt;br&gt;• Engage local and national partners that align with our social and environmental mission&lt;br&gt;• Increase social and civic engagement of employees and staff through voter registration</td>
</tr>
</tbody>
</table>
Environmental Management System

- **Commit**: Set long-term environmental and health objectives
- **Plan**: Conduct due diligence and assess opportunities for improvement
- **Monitor**: Track energy and environmental performance over time for continual improvement
- **Implement**: Implement energy management and benchmarking
Squire Village:
A Model Community of Opportunity

Squire Village, a 379-unit affordable housing neighborhood in Manchester, Connecticut, is a model Communities of Opportunity development. Jonathan Rose Companies acquired Squire Village in 2016 and has invested more than $12 million into the property to create an environmentally friendly and socially enriching community. Among the upgrades are a new 7,000 square foot community center, roof and gutter replacements, air sealing and insulation, a 250-kilowatt solar panel installation, accessibility improvements and fully remodeled units.

Meet and Greet event to interact with the new building staff and Resident Service Coordinator

During the event, representatives from First Choice Health Center evaluated the health status and needs of residents with health assessment surveys and performed on-site dental screening. Activities for adults and children were set up throughout the community, including arts and crafts, fitness games, face painting, de-stressing sessions and community garden planting.
Preserving and Multiplying Green Affordable Housing at Portner Flats

Protecting and expanding affordable housing opportunities in rapidly gentrifying urban communities is a nationwide challenge. At Portner Flats in Washington, D.C., Jonathan Rose Companies and our joint venture partners, Somerset Development Co. and New Community Partners, did just that.

Portner Flats is a new, 96-unit, affordable housing redevelopment at the former Portner Place Apartments site, which was acquired in 2013. The new development was rezoned to allow for double the number of affordable units. In addition to adding 48 affordable apartments, residents of the original site, who were relocated during the redevelopment process, were guaranteed units in the new development.
Partnering with CSC Service Works to Deliver More Efficient Laundry Services

In 2017, Jonathan Rose Companies and Rose Community Management worked to execute a master laundry agreement with CSC Service Works at 38 properties. Through the agreement, all existing washers and dryers—over 550 units—will be replaced with ENERGY STAR-certified machines. The new ENERGY STAR machines are expected to consume approximately 20 percent less energy and 35 percent less water than previous models, reducing annual costs across the properties. Furthermore, over their lifetimes the new machines will help prevent the release of greenhouse gas emissions—equivalent to taking 80 cars off the road per year.

Total annual cost savings: $100,647
Total annual electricity savings: 400,336 kWh
Total annual gas savings: 2,345 Therms
Total annual water savings: 3,997,085 gallons
Incentivizing Green Growth at Shippan Place
A Model Community of Opportunity

Shippan Place is a 148-unit affordable senior living community in Stamford, Connecticut, acquired in 2017. To improve environmental performance, the property leveraged electric and gas incentives from its local utility provider, Eversource Energy, to help complete large-scale energy retrofit projects. These projects included a domestic hot water boiler upgrade and comprehensive window and door replacement with new, high-performance ENERGY STAR-rated windows and sliding doors.
### Enterprise Green Communities Retrofit

#### Status: Exceeding Projections

<table>
<thead>
<tr>
<th>Package</th>
<th>Savings to Date</th>
<th>Energy Savings</th>
<th>Water Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enterprise Green Communities Retrofit</td>
<td>$102,739</td>
<td>22.70%</td>
<td>19.71%</td>
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</tbody>
</table>

#### Summary

<table>
<thead>
<tr>
<th></th>
<th>Cost</th>
<th>Annual Savings</th>
<th>Cumulative Savings</th>
<th>Cash Flow to Date</th>
<th>Simple Payback (years)</th>
<th>Annual ROI (%)</th>
<th>SIR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predicted</td>
<td>$496,663</td>
<td>$54,752</td>
<td>$54,752</td>
<td>($440,911)</td>
<td>9.05</td>
<td>11.05%</td>
<td>1.319</td>
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<tr>
<td>Actual</td>
<td>$496,663</td>
<td>$102,739</td>
<td>$102,739</td>
<td>($392,924)</td>
<td>4.82</td>
<td>20.73%</td>
<td>2.474</td>
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</table>
### Shippan Place

521 Shippan Avenue, Stamford, CT, 06902

<table>
<thead>
<tr>
<th>Indices</th>
<th>Utility Baseline - Owner</th>
<th>Most Recent Year - Owner</th>
<th>Difference</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>Energy Index</td>
<td>49 B</td>
<td>40 A</td>
<td>-18%</td>
<td>-9.00 kBtu/ft²/y</td>
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<tr>
<td>Cooling Index</td>
<td>4.5 C</td>
<td>4.3 C</td>
<td>-3%</td>
<td>-0.20 BTU/°F/CDD</td>
</tr>
<tr>
<td>Heating Index</td>
<td>4.1 A</td>
<td>3.3 A</td>
<td>-20%</td>
<td>-0.80 BTU/°F/HDD</td>
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<tr>
<td>Electric Baseload Index</td>
<td>3,583 B</td>
<td>2,936 B</td>
<td>-18%</td>
<td>-647 kWh/unit/yr</td>
</tr>
<tr>
<td>Fossil Fuel Baseload Index</td>
<td>7.7 A</td>
<td>6.2 A</td>
<td>-19%</td>
<td>-1.50 mmBTU/BRm/yr</td>
</tr>
<tr>
<td>Water Index</td>
<td>146.7 D</td>
<td>112.4 D</td>
<td>-23%</td>
<td>-34.3 gal/BRm/day</td>
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</tbody>
</table>
VALUE > COST
# Tangible Value

<table>
<thead>
<tr>
<th>NOI</th>
<th>Value</th>
<th>ROI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>NOI</td>
<td>NOI</td>
</tr>
<tr>
<td>- Expenses</td>
<td>÷ CAP Rate</td>
<td>÷ Cost</td>
</tr>
<tr>
<td>NOI</td>
<td>Value</td>
<td>ROI</td>
</tr>
</tbody>
</table>
## Value Creation

<table>
<thead>
<tr>
<th>NOI</th>
<th>VALUE</th>
<th>ROI</th>
</tr>
</thead>
<tbody>
<tr>
<td>REVENUE $ -</td>
<td>NOI $ 7,570</td>
<td>NOI $ 7,570</td>
</tr>
<tr>
<td>+ EXP SAVINGS 7,570</td>
<td>[ \div \text{CAP RATE} 6.00% ]</td>
<td>COST 125,000</td>
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<tr>
<td>- EXPENSES -</td>
<td>VALUE $ 126,167</td>
<td>TAX CREDIT 30% (37,500)</td>
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<tr>
<td>NOI $ 7,570</td>
<td>[ \div \text{NET INVESTMENT} 87,500 ]</td>
<td>ROI 8.65%</td>
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</tbody>
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INTANGIBLE VALUE

• MARKETING
  - On Site
  - Web Site
  - Visibility
• BRANDING
• RISK MITIGATION
• PRESS
• CUSTOMER SATISFACTION
• INVESTOR ENGAGEMENT