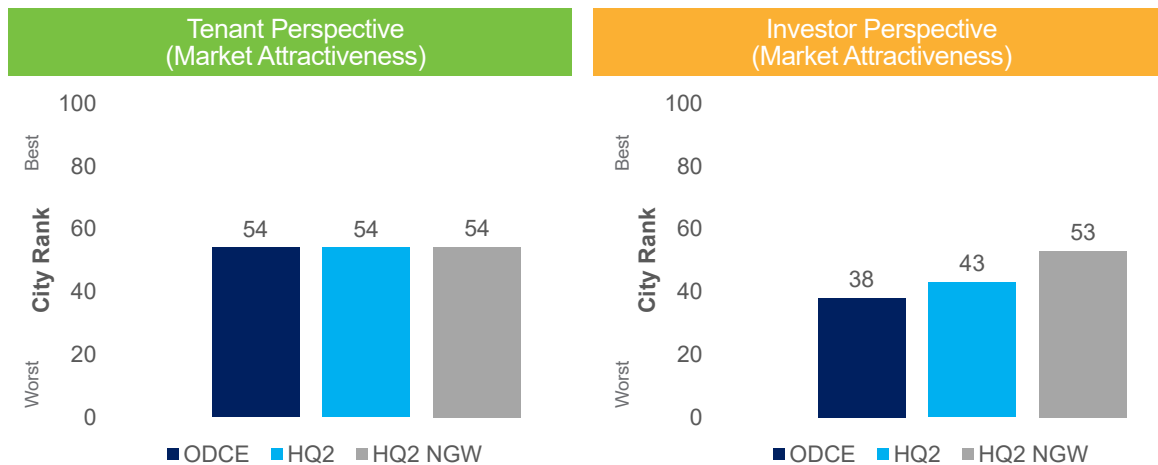


# Amazon's Challenge to Institutional Real Estate

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Amazon's search for a new headquarters ("HQ2") has demonstrated the redefining of corporate America's view of geographical location, placing at risk decades long views of optimal capital allocation for real estate investors. In CenterSquare's 2016 research piece "Beyond the Gateway," we defined our thesis on the shifting opportunities in real estate that favored top tier secondary markets. When Amazon announced their shortlist of HQ2 markets, we were not surprised to find a significant overlap between our preferred secondary markets and Amazon's choices for a second hub. While investors this cycle have exhibited a preoccupation with gateway markets such as New York, Washington and San Francisco, there is another subset of MSAs of preferred secondary markets (think Denver, Atlanta and Pittsburgh) that offer many of the attractive attributes of gateway markets but without the price tag for investment. Amazon's choice of a new location for HQ2 offers corporations access to the same attractive labor pool but with better occupancy cost and affordability for employees. In this paper we present a side by side analysis of Amazon's HQ2 cities with traditional real estate capital allocation reflected in the NCREIF Fund Index – Open End Diversified Core Equity ("ODCE"). We find that institutional investors' real estate allocations may be at risk of becoming outdated, while opportunities to allocate capital to emerging vibrant centers of growth can actually come at an attractive price tag.



Markets ranked on metrics from the tenant perspective (quality of life & cultural fit, affordability, quality of labor pool, business-friendly environment, quality of existing infrastructure, and sustainability standards). Refer to Page 6 for market score detail.

Markets ranked on metrics from the investor perspective (property yield, property cost basis, market demand, and real estate supply). Refer to Page 6 for market score detail.

Source: CenterSquare compiled rankings based on our metrics noted above.

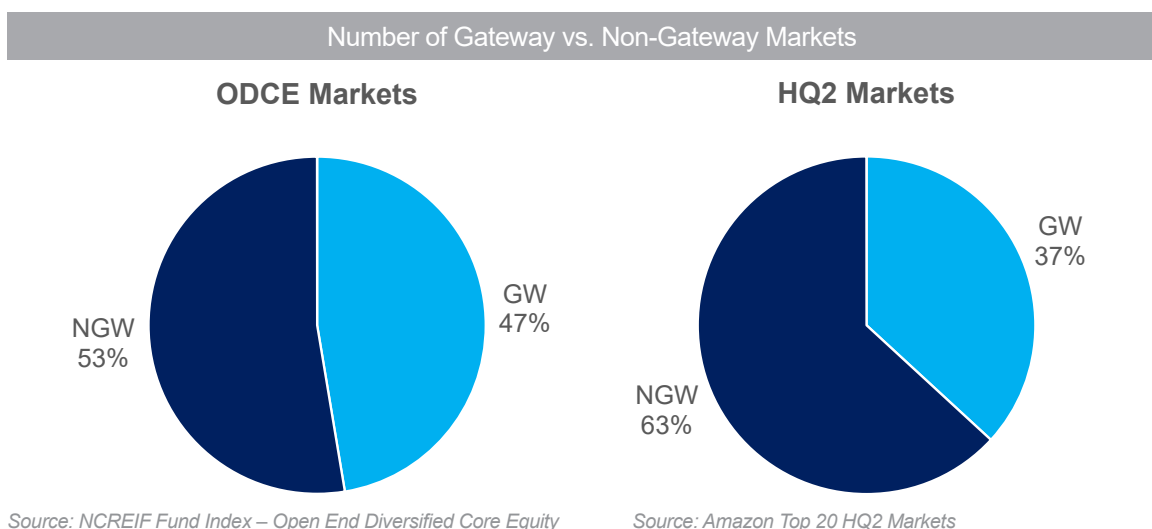
Source: ODCE: Average rank of largest 20 US markets included in the ODCE Index; HQ2: Average rank of US markets included in shortlist for the Amazon HQ2; HQ2 Non-GW: Average rank of US non-gateway markets included in the shortlist for HQ2. All markets ranked among top 50 US MSAs.

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In our analysis of Amazon’s HQ2 RFP, we identified the key locational criteria Amazon outlined for its second headquarters. In the sections below, we have measured how their shortlist of locations for HQ2 compares to ODCE<sup>1</sup>, a measure of traditional institutional real estate investment, from a geographical, tenant and investor perspective. We have identified key market characteristics that we outline in the appendix, that we have scored, using various data sources including private real estate indices and census data to derive an overall score for each city. We then calculate the average for ODCE, HQ2 and HQ2 non-gateway markets and compare these markets to each other.

## Geographical Comparison

When analyzing the HQ2 and ODCE markets, the first thing to note is the difference in the number of gateway versus non-gateway cities. The majority of capital this cycle has been deployed in gateway markets, which dominate the ODCE markets. HQ2 markets, however, have a larger concentration of non-gateway markets.



Below we explore how the attractiveness of these markets compares from the standpoints of both tenants and investors.

## Tenant Perspective

The building blocks for business success have remained constant over time – top talent that drives growth and a business-friendly environment that enables said growth – and they dominate the characteristics office tenants, like Amazon, seek in location.

Companies are competing for top talent in today’s tight labor market, and Amazon is no exception as it plans to fill HQ2 with 50,000 new employees earning on average \$100,000 per year<sup>2</sup>. Whether the existing labor pool or upcoming college graduates, today’s talent pipeline is attracted to cities that provide a thriving culture and, increasingly, a high quality of life. From this perspective, Amazon’s HQ2 non-gateway markets score favorably when assessing market characteristics from the tenant perspective, as they provide a similar quality of life as gateway cities with a significantly lower price tag. As the workforce continues its shift toward these markets, the quality of the existing labor pool is also becoming increasingly similar between these non-gateway and gateway markets. Moreover, while coastal gateway markets boast proximity to some of the premier higher education institutions in the world, Amazon’s select non-gateway markets also provide access to some of the best university systems (i.e. Carnegie Mellon University, University of Texas, Duke University) producing a pipeline of highly qualified graduates.

As talent increasingly moves to this new subset of preferred secondary markets, companies are following suit. In addition to benefitting from the workforce in these secondary markets, companies are also benefitting from lower prices. This is not only via lower rents driving lower occupancy costs, but also via the more business-friendly environments created by non-gateway local governments trying to attract companies. One aspect in which gateway markets still outperform

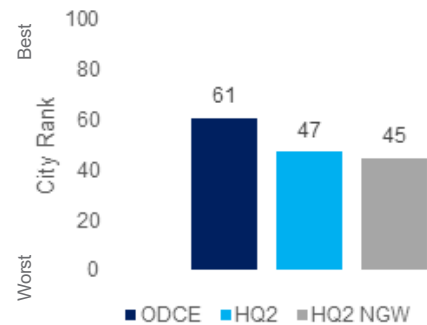
<sup>1</sup> NCREIF Fund Index – Open End Diversified Core Equity

<sup>2</sup> Amazon’s HQ2 RFP

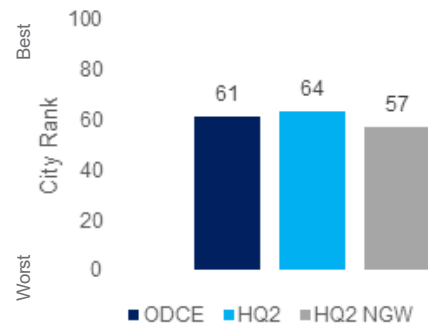
Amazon’s HQ2 non-gateway markets is in the quality of existing infrastructure and sustainability standards in place to sustain growth. However, several proposals submitted for HQ2 included significant spending plans to strengthen the infrastructure in many of these non-gateway markets to facilitate expansion.

Below we detail the six factors that generate the overall “Market Attractiveness” score from a tenant perspective (shown in the introduction). Our observation is that ODCE markets outperform HQ2 and HQ2 non-gateway markets in terms of quality of life and fit, sustainability and infrastructure; whereas HQ2 and HQ2 non-gateway cities have a similar quality of labor pool to ODCE but significantly outperform in terms of affordability and business-friendly environments.

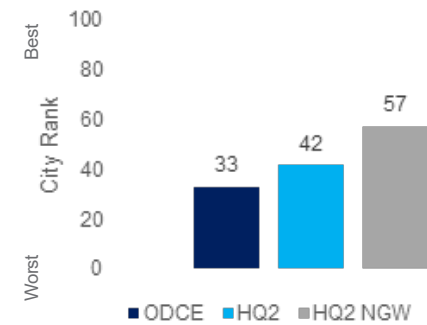
**Quality of Life & Cultural Fit**      **Quality of Labor Pool**      **Affordability**



Markets ranked on quality of life and cultural fit based on diversity (based on ESRI’s diversity index) and quality of life (as measured by the best places to live ranked by US News and World Report, which takes into account the job market, value, quality of life, desirability, and net migration).

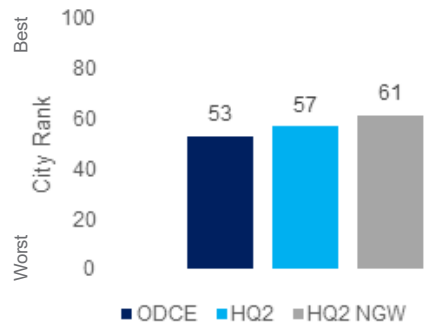


Markets ranked on quality of labor pool based on relevant occupation employment (percentage of workforce employed in Management, Business & Financial Operations, Computer & Mathematical, Architecture & Engineering, Life, Physical, & Social Sciences, Legal, Education, Training, & Library, and Healthcare Practitioners & Technical occupations), education attainment (percentage of population holding at least a Bachelor’s degree), and higher education institution score (Times Higher Education rank of institutions and concentration of institutions in the region of the market).

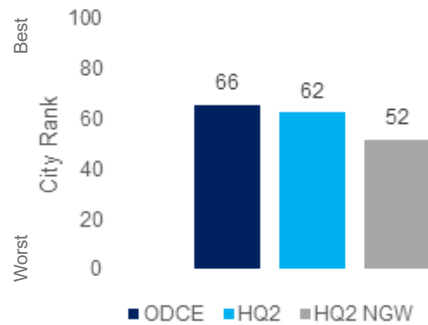


Markets ranked on level of affordability based on value (as measured by the best places to live ranked by US News and World Report, which takes into account the job market, value, quality of life, desirability, and net migration), and office and apartment affordability (ranked based on the top 50 MSAs’ office and apartment rents as of 4Q17 from CoStar).

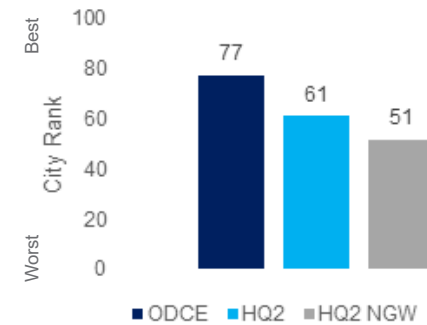
**Business-Friendly Environment**      **Quality of Existing Infrastructure**      **Sustainability Standards**



Markets ranked on business-friendly environments based on state business tax environment (based on the Tax Foundation’s 2017 ranking that considers Corporate Tax, Individual Income Tax, Unemployment Insurance Tax, and Property tax across all 50 states and D.C) and entrepreneurship growth score (based on rankings from the 2017 Growth Entrepreneurship Index published by the Ewing Marion Kauffman Foundation that measures three components of business growth – rate of startup growth, share of scaleups, and high-growth company density).



Markets ranked on quality of existing infrastructure based on public transit scores (based on public transit scores compiled by AllTransit that are weighted sums of transit connectivity, access to land area and jobs, and frequency of service), fiber connectivity (based on ESRI’s fiber connectivity index), and cellular coverage (based on ESRI’s cellular coverage index).



Markets ranked on quality of sustainability standards based on a study by SaveOnEnergy that scored the efforts of over 200 cities in the U.S. on nine aspects that were indicative of environmental sustainability efforts. Positive scores were awarded for public parks, conduciveness to walking and biking, electric vehicle charging stations, recycling centers, and organic grocers and farmers markets. Negative scores were given for commute distance and carbon footprint per household.

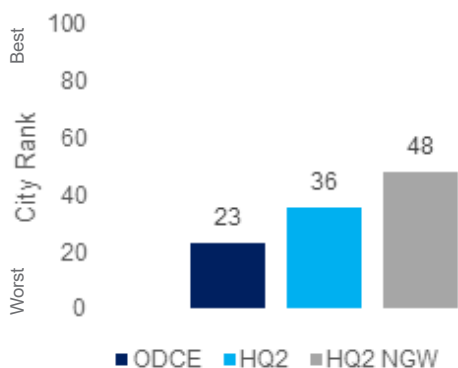
Source: ODCE: Average rank of largest 20 US markets included in the ODCE Index; HQ2: Average rank of US markets included in shortlist for the Amazon HQ2; HQ2 Non-GW: Average rank of US non-gateway markets included in the shortlist for HQ2. All markets ranked among top 50 US MSAs.

## Investor Perspective

From an investor perspective, Amazon's list of prospective HQ2 locations, given their bias toward non-gateway cities, offer investors a higher property yield and a lower dollar per square foot investment price than ODCE markets. However, perhaps contradicting much conventional wisdom, this lower price tag does not necessarily come at the expense of a less attractive fundamental picture. From a supply and demand perspective, HQ2 and non-gateway cities compare favorably to ODCE markets. For many of the reasons discussed, HQ2 markets are seeing solid demand as the workforce moves toward these select secondary markets, with office employment and household income growth in HQ2 non-gateway markets often outpacing that of gateway markets. Further, one of the hesitations of institutional investors to look beyond gateway markets has traditionally been supply. However a unique feature of this cycle is that low development yield hurdles and high asset values have resulted in many gateway cities experiencing increased supply, despite the conventional view of higher barriers to development. Infact, HQ2 cities are exposed to similar levels of competition from new supply compared to ODCE markets as rents have often not risen to a level to justify new construction.

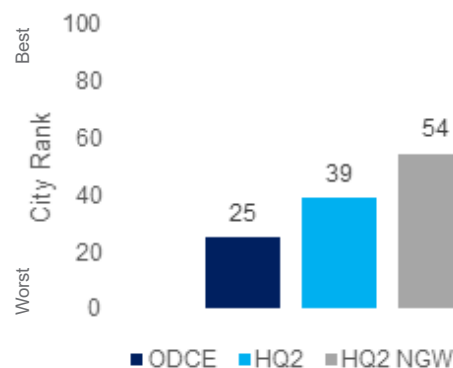
Below we detail the four factors that generate the overall “Market Attractiveness” score from an investor perspective (shown in the introduction). In summary, Amazon’s HQ2 and HQ2 non-gateway cities, in comparison to ODCE, offer investors similar market fundamentals at more attractive values.

### Property Yield



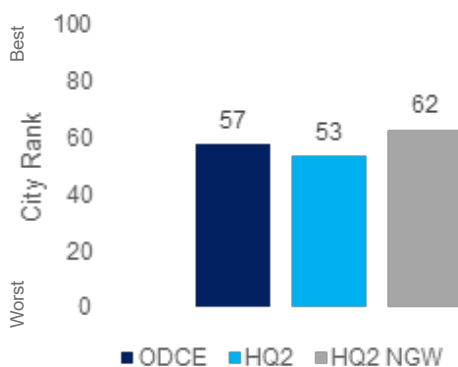
Markets ranked based on property yield on office and apartment yield (based on rankings of the top 50 MSAs’ office and apartment transaction cap rates as of 4Q17 from CoStar).

### Property Cost Basis



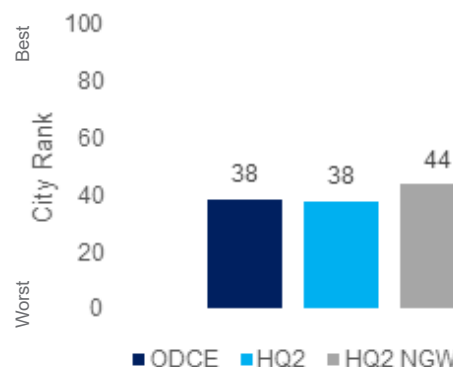
Markets ranked based on cost basis on office price per square foot and apartment price per unit affordability (based on rankings of the top 50 MSAs’ office price per square foot and apartment price per unit as of 4Q17 from CoStar).

### Market Demand



Markets ranked based on market demand based on income growth and office employment growth scores (based on rankings of the top 50 MSAs’ annual growth rate of median household income and office employment from 2010-2017 as of 4Q17 from CoStar).

### Real Estate Supply



Markets ranked based on level of office and apartment supply as a percentage of existing stock (based on rankings of the top 50 MSAs’ office and apartment supply as a percentage of existing stock as of 4Q17 from CoStar).

Source: ODCE: Average rank of largest 20 US markets included in the ODCE Index; HQ2: Average rank of US markets included in shortlist for the Amazon HQ2; HQ2 Non-GW: Average rank of US non-gateway markets included in the shortlist for HQ2. All markets ranked among top 50 US MSAs.

## Amazon HQ2 RFP

The RFP published by Amazon in September 2017 outlines qualities and preferences for the location for HQ2. While open to the type of development (urban or suburban campus of existing or development-prepped sites), the company is requiring the following for all site locations:

- Within 30 miles to the population center
- Within 45 minutes to an international airport
- Within 1-2 miles of major arterial roads
- Access to mass transit on site

### Amazon also asked cities to address the following in their proposals:

- Commitment to sustainability
- Level of fiber and cellular connectivity
- Technical qualifications of workforce
- Strength of university system
- Availability of incentive programs
- Business-friendly tax and regulatory environments
- Cultural fit within a strong and unique community
- Quality of life

## Conclusion

With asset prices in gateway markets appearing full and investors seeking new opportunities, we see value in targeting select non-gateway markets. Many of these markets are expected to see strong growth given they combine a pro-business environment with a high quality of life at a lower price point, attracting top talent and employers – evident from Amazon’s hunt for a home for HQ2. Not only do these markets satisfy tenant demands, they also provide investors with a lower basis and higher yield without having to compromise on the fundamentals. The shortlist of top 20 cities in Amazon’s competitive site selection has sent a strong signal of the shift in corporate America’s priorities regarding geographical location and should encourage investors to continue to look “beyond the gateway” to identify opportunities within commercial real estate.

## Market Score Detail

These scores were calculated by gathering data for the top 50 MSAs on 14 metrics from the tenant perspective and 9 metrics from the investor perspective. Each market was then ranked from best (100) to worst (0) for each metric. The ODCE, HQ2, and HQ2 NGW scores were determined by calculating the average rank of the markets included in the respective market subsets.

Market Scores	ODCE	HQ2	HQ2 NGW
<b>Tenant Perspective</b>			
Quality of Life and Cultural Fit	61	47	45
Diversity Score	62	44	45
Quality of Life Score	60	51	45
<b>Affordability</b>	<b>33</b>	<b>42</b>	<b>57</b>
Value Score	37	51	64
Protection from Elimination of SALT Deductions	42	43	58
Office Rent Affordability Score	24	34	49
Apartment Rent Affordability Score	29	39	56
<b>Quality of Labor Pool</b>	<b>61</b>	<b>64</b>	<b>57</b>
Relevant Occupation Employment Score	59	61	56
Education Attainment Score	60	65	61
Higher Education Institution Score	64	65	55
<b>Business Friendly Environment</b>	<b>53</b>	<b>57</b>	<b>61</b>
State Business Tax Environment Score	41	49	57
Entrepreneurship Growth Score	65	64	66
<b>Quality of Existing Infrastructure</b>	<b>66</b>	<b>62</b>	<b>52</b>
Public Transit Score	65	65	49
Fiber Connectivity Score	64	55	49
Cellular Coverage Score	67	67	57
Sustainability Score	77	61	51
<b>Tenant Perspective Av. Score</b>	<b>54</b>	<b>54</b>	<b>54</b>
<b>Investor Perspective</b>			
Property Yield	23	36	48
Office Cap Rate Rank Score	20	31	41
Apartment Cap Rate Rank Score	26	41	56
<b>Property Cost Basis</b>	<b>25</b>	<b>39</b>	<b>54</b>
Office Price psf Affordability Score	23	40	56
Apartment Price per unit Affordability Score	26	38	53
<b>Market Demand</b>	<b>57</b>	<b>53</b>	<b>62</b>
Income Growth Rank Score	52	53	64
Office Employment Growth Rank Score	60	53	61
Population Growth	61	55	62
<b>Real Estate Supply</b>	<b>38</b>	<b>38</b>	<b>44</b>
Office Supply Rank Score	34	38	44
Apt Supply Rank Score	43	37	43
<b>Investor Perspective Av. Score</b>	<b>38</b>	<b>43</b>	<b>53</b>
<b>Total</b>	<b>46</b>	<b>49</b>	<b>54</b>

Note: Refer to the individual city market scores on the following page.

### Tenant Perspective Scores - Individual Markets

Market	Market Type	Included in HQ2 Metrics	Included in ODCE Metrics	Diversity Score	Quality of Life Score	Value Score	Protection from Elimination of SALT Deductions	Office Rent Affordability Score	Apartment Rent Affordability Score	Relevant Occupation Employment Score	Education Attainment Score	Higher Education Institution Score	State Business Tax Environment Score	Entrepreneurship Growth Score	Public Transit Score	Fiber Connectivity Score	Cellular Coverage Score	Sustainability Score	Tenant Perspective Av. Score
Boston	GW	Y	Y	14	78	26	10	20	8	92	92	100	52	82	96	90	90	74	62
Chicago	GW	Y	Y	32	14	32	30	26	36	66	62	76	58	44	88	82	100	92	56
Los Angeles	GW	Y	Y	94	66	8	16	8	10	24	34	94	6	34	66	52	22	98	42
Miami	GW	Y	Y	62	84	2	76	16	24	12	22	26	94	22	80	36	58	54	45
New York City	GW	Y	Y	64	30	4	4	4	4	60	70	74	4	30	98	100	98	100	50
San Francisco	GW	N	Y	82	52	22	16	2	2	90	94	80	6	84	98	88	74	96	59
Washington, DC	GW	Y	Y	26	66	68	8	10	14	94	96	86	18	96	90	52	92	80	60
Montgomery Co	GW	Y	N	26	66	68	10	14	16	94	96	86	32	96	90	52	92	76	61
NoVA	GW	Y	N	26	66	68	30	12	16	94	96	86	44	96	90	52	92	20	59
Atlanta	NGW	Y	Y	12	12	52	52	52	54	62	60	58	40	88	68	30	36	86	51
Austin	NGW	Y	Y	54	96	66	88	18	48	64	84	30	70	94	30	72	88	88	66
Columbus	NGW	Y	N	36	30	80	52	82	86	58	54	50	22	92	30	24	56	40	53
Dallas	NGW	Y	Y	66	52	68	88	42	56	38	42	22	70	76	48	68	80	58	58
Denver	NGW	Y	Y	46	84	58	52	36	26	72	86	46	64	72	68	48	66	62	59
Houston	NGW	N	Y	80	46	80	88	28	60	28	30	56	70	80	44	72	84	82	61
Indianapolis	NGW	Y	N	42	18	96	72	88	96	30	36	68	90	78	18	40	62	16	57
Nashville	NGW	Y	N	50	52	58	98	34	52	22	46	34	78	90	14	42	48	44	51
Newark	NGW	Y	N	90	30	4	4	30	22	74	70	84	2	30	80	46	16	32	41
Philadelphia	NGW	Y	N	48	10	32	44	46	42	80	58	78	54	50	86	82	84	68	57
Pittsburgh	NGW	Y	N	22	18	96	44	66	72	40	48	70	54	52	74	8	30	50	50
Raleigh	NGW	Y	N	24	88	90	44	48	64	76	90	64	84	2	24	76	58	22	57
San Jose	NGW	N	Y	96	100	32	16	6	6	100	78	72	6	86	56	90	74	70	59
Inland Empire	NGW	N	Y	88	66	8	16	64	30	4	2	94	6	34	28	96	40	24	40
San Diego	NGW	N	Y	74	96	12	16	24	12	68	88	94	6	74	42	60	78	94	56
Phoenix	NGW	N	Y	90	30	44	62	38	80	36	8	40	60	68	40	14	10	66	46
Seattle	NGW	N	Y	66	40	40	76	22	20	88	80	48	62	58	72	42	52	90	57
ODCE				62	60	37	42	24	29	59	60	64	41	65	65	64	67	77	54
HQ2				44	51	51	43	34	39	61	65	65	49	64	65	55	67	61	54
HQ2 NGW				45	45	64	58	49	56	56	61	55	57	66	49	49	57	51	54

### Investory Perspective Scores - Individual Markets

Market	Market Type	Included in HQ2 Metrics	Included in ODCE Metrics	Office Rate Score	Cap Rate Rank	Apartment Cap Rate Rank	Office Price per sq ft Affordability Score	Apartment Price per unit Affordability Score	Income Growth Rank	Office Employment Growth Score	Population Growth	Office Supply Rank Score	Apt Supply Rank Score	Investor Perspective Av. Score
Boston	GW	Y	Y	8	18	10	4	80	40	40	46	10	28	
Chicago	GW	Y	Y	28	36	44	34	42	34	8	36	52	35	
Los Angeles	GW	Y	Y	6	6	12	12	28	36	30	42	66	26	
Miami	GW	Y	Y	14	40	24	26	10	74	66	40	4	33	
New York City	GW	Y	Y	2	4	6	8	26	42	32	18	40	20	
San Francisco	GW	N	Y	4	2	2	2	100	100	54	2	58	36	
Washington, DC	GW	Y	Y	10	12	14	18	14	12	60	20	18	20	
Montgomery Co	GW	Y	N	36	24	18	20	72	44	60	20	18	35	
NoVA	GW	Y	N	30	24	16	20	18	54	60	20	18	29	
Atlanta	NGW	Y	Y	32	48	50	66	36	80	74	34	60	53	
Austin	NGW	Y	Y	16	42	20	28	94	96	100	4	46	50	
Columbus	NGW	Y	N	60	96	90	82	78	60	58	62	48	70	
Dallas	NGW	Y	Y	26	76	28	52	46	84	88	16	34	50	
Denver	NGW	Y	Y	24	20	34	16	92	58	80	12	8	38	
Houston	NGW	N	Y	46	44	32	64	12	64	94	72	96	58	
Indianapolis	NGW	Y	N	54	80	74	86	58	68	48	92	54	68	
Nashville	NGW	Y	N	50	36	42	50	88	98	90	28	2	54	
Newark	NGW	Y	N	58	60	66	38	16	2	20	88	44	44	
Philadelphia	NGW	Y	N	40	62	70	46	32	16	22	52	72	46	
Pittsburgh	NGW	Y	N	48	74	82	76	82	20	6	90	80	62	
Raleigh	NGW	Y	N	38	22	56	40	86	90	96	8	28	52	
San Jose	NGW	N	Y	12	8	4	6	98	94	46	6	24	33	
Inland Empire	NGW	N	Y	44	32	58	36	6	30	42	94	88	48	
San Diego	NGW	N	Y	22	14	22	10	50	22	56	78	76	39	
Phoenix	NGW	N	Y	34	34	30	54	64	76	82	54	30	51	
Seattle	NGW	N	Y	20	10	8	14	90	72	78	10	14	35	
ODCE				20	26	23	26	52	60	61	34	43	38	
HQ2				31	41	40	38	53	53	55	38	37	43	
HQ2 NGW				41	56	56	53	64	61	62	44	43	53	

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## Definition of Indices

### NCREIF Fund Index – Open End Diversified Core Equity (“ODCE”)

The ODCE is a capitalization-weighted, gross of fee, time-weighted return index with an inception date of December 31, 1977. The term Diversified Core Equity style typically reflects lower risk investment strategies utilizing low leverage and generally represented by equity ownership positions in stable U.S. operating properties diversified across regions and property types. The NFI-ODCE, like the NCREIF Property Index (NPI) and other stock and bond indices, is a capitalization-weighted index based on each fund’s net invested capital, which is defined as beginning market value net assets (BMV), adjusted for weighted cash flows (WCF) during the period.

### ESRI Diversity Index

The Diversity Index from Esri represents the likelihood that two persons, chosen at random from the same area, belong to different race or ethnic groups. Ethnic diversity, as well as racial diversity, is included in the definition of the Diversity Index. Esri’s diversity calculations accommodate up to seven race groups: six single-race groups (White, Black, American Indian, Asian, Pacific Islander, Some Other Race) and one multiple-race group (two or more races). Each race group is divided into two ethnic origins, Hispanic and non-Hispanic. If an area is ethnically diverse, then diversity is compounded.

These benchmarks are broad-based indices which are used for illustrative purposes only and have been selected as they are well known and are easily recognizable by investors. However, the investment activities and performance of an actual portfolio may be considerably more volatile than and have material differences from the performance of any of the referenced indices. Unlike these benchmarks, the portfolios portrayed herein are actively managed. Furthermore, the portfolios invest in substantially fewer securities than the number of securities comprising each of these benchmarks. There is no guarantee that any of the securities invested in by the portfolios comprise these benchmarks. Also, performance results for benchmarks may not reflect payment of investment management/incentive fees and other expenses. Because of these differences, benchmarks should not be relied upon as an accurate measure of comparison.

## About the Authors



### Scott Crowe, Chief Investment Strategist

Mr. Scott Crowe is the Chief Investment Strategist at CenterSquare Investment Management and joined the firm in 2015. Scott is a member of CenterSquare’s listed real estate, listed infrastructure and private real estate investment committees. In his capacity as Chief Investment Strategist, Scott works with each team’s portfolio managers and investment professionals in the leadership of the investment process, with a particular focus on thought leadership by synthesizing our real asset views across the business. Scott is the portfolio manager of the Global Concentrated real estate securities strategy. Scott also works directly with CenterSquare’s clients, providing education and guidance on the market and helping them execute their investment goals. Prior to joining CenterSquare, Scott was CIO of Liquid Alternatives at Resource Real Estate where he built and led a global investment and distribution platform. Prior thereto, Scott was the lead Global Portfolio Manager for Cohen & Steers, where he was responsible for \$10B in assets under management and led the investment and research team of over 20 portfolio managers and analysts. Prior to this, Mr. Crowe held the position of Head of Global Real Estate for UBS Equities Research, where he built and managed the U.S. REIT division while leading a global team of more than 40 analysts. Scott began his career at Paladin Property Securities and holds an Honors Finance Degree from the University of Technology Sydney and a Bachelor of Commerce from the University of NSW / National University of Singapore.



### Uma Pattarkine, Investment Strategy Analyst

Ms. Pattarkine is an Investment Strategy Analyst for CenterSquare Investment Management. She joined the team in 2017 and focuses primarily on top down analysis, research and product development, and is an active member of the public side research effort. Prior to joining CenterSquare, Ms. Pattarkine spent three years in corporate finance and strategic planning at ExxonMobil in Houston. Ms. Pattarkine graduated from The Pennsylvania State University with Interdisciplinary Honors and High Distinction and holds a BS in Finance with a minor in International Business, BS in Accounting, and Master of Accountancy.

## About CenterSquare

Founded in 1987, CenterSquare Investment Management is an independent, management-owned real asset manager focused on listed and private equity real estate and listed infrastructure investments. As an investor and manager, our success is firmly rooted in aligning our firm's interests with those of our clients, partners and employees, as well as our commitment to alpha-generating research.

CenterSquare Investment Management is headquartered in suburban Philadelphia, with offices in Los Angeles, Denver, London and Singapore. CenterSquare is proud to manage investments on behalf of some of the world's leading institutional and private investors.



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