

REIS EXPOSURE DRAFT

Proposed Performance Measurement Resource Manual

Issued by the Real Estate Information Standards Council in Conjunction with the
Real Estate Information Standards Board

February 1, 2010

Comment Deadline: April 1, 2010

Interested parties wishing to comment on this Exposure Draft must do so in writing by April 1, 2010. Interested parties should submit their comments by e-mail to Marybeth Kronenwetter, REIS Administrator (Marybeth@reius.org).

An electronic copy of this document will remain on the Real Estate Information Standards (REIS) web site until the REIS Board issues the final Adopting Release related to this project. In addition, upon expiration of the public comment period (April 1, 2010), all comments received will be posted on the REIS web site (www.reius.org) and remain on the web site until the Adopting Release is issued.

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Attachment

- A. Proposed Performance Measurement Resource Manual
- B. Task Force Participants

Section 1: Executive Summary

Background

01. The purpose of this Exposure Draft is to propose a Performance Measurement Resource Manual (Manual) which provides guidance: to support the required and recommended performance measurement practices within the REIS Standards; and for other performance metrics, not currently addressed within REIS but which are commonly used to report performance information to investors in institutional real estate investment in the United States.
02. Within the REIS standards, the Global Investment Performance Standards (GIPS) is the Foundational Standard for Performance Measurement. The GIPS standards address composite performance presentation standards for prospective clients. The REIS standards address reporting to existing clients. Concepts described in this Manual are believed to be consistent with the spirit of the GIPS standards.
03. The Manual addresses performance metrics including: time-weighted returns (TWR), dollar-weighted returns (IRR) and equity multiples. The Manual includes a description of each performance element, its use, and formula for its calculation. In addition, the Manual includes sample performance disclosures and a listing of data elements which should be collected in order to prepare the measures. It is up to the user of the Manual to determine the usefulness of each metric as the metrics described may not necessarily be meaningful for all investment strategies or fund structures.
04. The proposed Manual was prepared in response to the industry's request for such information. The REIS Board and Council have concluded that a resource such as this Manual is important to bring more calculation uniformity to the practice and thereby promote comparability and foster transparency within the industry.

Periodic Updates

05. The REIS Board and Council expect to update this Manual as the need arises, but no less frequently than annually.

Request for Feedback

06. The REIS Council is requesting feedback with respect to the accuracy of the calculations, the clarity of the disclosures and the overall utility of the Manual. In addition, the REIS Council is requesting feedback as to whether the Manual will promote compliance and verifiability within the REIS Standards.

Section 2: Questions for Consideration by Respondents

01. Members of NCREIF, Pension Real Estate Association (PREA) and other interested parties are encouraged to send written comments on all matters proposed in the Exposure Draft. Comments are requested from those who agree with the proposed Manual and those who do not agree. Comments are most helpful if the section and paragraph numbers are referenced within the response (e.g., 2.01 for this paragraph). Respondents who disagree with the provisions of the Exposure Draft should suggest alternatives which are supported by specific reasoning.
02. The following questions are to be considered in your firm's response to the Exposure Draft.

Performance Elements

03. Issue: The Manual provides definitions, uses, calculations and examples of performance elements included within the REIS standards and/or commonly used by investors in institutional real estate investment in the United States. These concepts are believed to be consistent with the Global Investment Performance Standards (GIPS). The following are the elements included in the Manual:
- a. Time-weighted returns (TWR)
 - b. Internal rate of returns (IRR) (i.e., Dollar-weighted returns)
 - c. Equity Multiples
 - i. Investment Multiple (i.e., Total Value to Paid-In Capital Multiple)
 - ii. Realization Multiple (i.e., Cumulative Distributions to Paid-In Capital Multiple)
 - iii. Paid-In Capital to Committed Capital Multiple
 - iv. Residual Value to Paid-In Capital
 - d. Other Performance Metrics
 - i. Disaggregated Income Returns
 - ii. Leverage Ratio
 - iii. Measures of Dispersion within a Group
04. Question: For each of the performance elements noted in .03 above, please answer the following:
- a. Are the descriptions of the uses of the element clear and presented in sufficient detail?

- b. Do you agree that the calculations presented are correct?
- c. Are the examples useful and clear?
- d. Are there any elements which should be removed from the Manual? If so, please explain why.

Compliance with the REIS Standards

05. *Issue:* The objectives of the Manual are to provide practical guidance to support the required and recommended performance measurement practices within the [REIS Standards](#); and to provide guidance on other performance metrics, which may not currently be mentioned in REIS, but are still commonly used by investors in institutional real estate in the United States. Within Chapter 4, Fund Reporting Standards (Chapter 4) are the following quarterly reporting requirements and recommendations relating to performance metrics:

- a. All Funds, Required: Fund Level Total TWR gross and net of fees
- b. Required for Closed-end Funds: Since inception IRR, gross and net of fees (SI-IRR)
- c. Recommended for Closed-end Funds: Paid-In Capital, Investment, Realization and Residual Multiples
- d. Recommended for Open-end Funds: Fund level component TWR, gross and net of fees, current quarter calculated using the REIS Fair Value Accounting Policy Manual

06. *Question:* For each of the elements contained in the Manual and Chapter 4, does the Manual provide sufficient guidance and support for REIS Compliance for the performance elements included in Chapter 4? Should any elements listed in the Manual which are not currently included in the Chapter 4 of the REIS Standards be considered for inclusion in the REIS Standards?

Disclosures

07. *Issue:* Section 7 of the Manual includes some sample disclosure elements which may be included in performance presentation materials provided to clients. These suggested disclosures are intended to provide clarity and transparency when analyzing performance or comparing performance within and across funds.

08. *Question:* Do the suggested disclosures provide clarity and transparency? What additional disclosures should be provided?

Future Topics

09. *Issue:* Further research is needed and ongoing with respect to the following elements within the Manual: partial period treatment within TWR; the impact of a zero or negative

denominator of the calculation of TWR resulting from underwater assets; and cash on cash returns.

10. *Question:* Are there additional performance metrics or disclosures which should be addressed in future versions of the Manual? Are there any other issues in the Manual which you think need to be addressed or clarified?

Affirmation

11. *Issue:* The Manual has been organized by performance element and further organized by return level (property, investment, and fund). The metrics listed may not necessarily be meaningful for all investment strategies or fund structures so it is up to the user to determine the usefulness of each item as it is applied to each entity.

In addition, there are separate sections which include; only the calculations (Section 6, Computation Methodologies); sample presentations and suggested disclosures (Section 7) and Performance Information Elements (Section 8) which provide the list of elements which are used in various return formulas that should be collected and retained by information providers. The organization was intended to provide maximum utility to users.

12. *Question:* Do you agree that the formats are user-friendly and provide maximum utility to users? If you do not agree, please suggest how the Manual can be more user-friendly and provide more utility.

Section 3: Basis for Conclusions

01. This section summarizes the process used by the Performance Measurement Task Force (PMTF) to develop the Manual and reach its conclusions.
02. *Team:* The members of the PMTF are listed on the attached Appendix B. All members have expertise in Performance Measurement. In order to ensure interdisciplinary expertise within the PMTF, members of the REIS Council also participated.
03. *Process:* The process for development of the Manual began in June 2009. Team leaders and members of the REIS Council collaborated to develop the basic outline. The PMTF was divided into smaller groups to develop each section. Collectively, the entire PMTF met bi-weekly to monitor progress and vet any issues. Updates were provided to the REIS Council. In addition, members of the Performance Measurement Committee reviewed and discussed this document during the summer and fall 2009 NCREIF conferences. In addition, during the fall conference, comments were solicited from all NCREIF standing committee members and the REIS Council. All comments were considered and a document was presented to the REIS Council for its approval in December.
04. *Publications Considered:* This Manual was prepared as a response to the industry's request for a resource manual which would provide guidance to the use, preparation and understanding of performance metrics commonly used in the industry. Previously, performance information elements were included in various sources including the reference materials cited in this Manual and the Performance Returns Workbook previously published by NCREIF. These sources were considered in the development of the Manual.
05. *Industry Exposure:* In order to promote credibility and foster widespread acceptance of REIS as the standard for reporting of U.S. institutional investment performance to investors, the REIS Board concluded that exposure to the industry was critical.

Performance Measurement Resource Manual

December 2009

Notice to Readers

The Performance Measurement Resource Manual provides guidance on performance metrics commonly used by institutional equity real estate investors in the United States to promote transparency and calculation consistency.

Further research is needed and ongoing to incorporate the following into the Performance Measurement Resource Manual:

- 1) partial period treatment of time-weighted returns
- 2) zero/negative denominator in calculating time-weighted returns (underwater assets)
- 3) the calculation of cash on cash returns and other performance metrics

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1. Introduction

1.01 Purpose of Manual

- 1.01 (a) The purpose of the Performance Measurement Resource Manual (Manual) is to provide guidance to support the required and recommended performance measurement practices within the REIS Standards. In addition, the Manual will also provide guidance on other performance metrics, which may not currently be mentioned in REIS, but are still commonly used by investors in institutional real estate in the United States. The metrics listed may not necessarily be meaningful for all investment strategies or fund structures so it is up to the user to determine the usefulness of each item as it is applied to each entity (the term “entity” will be used throughout the Manual to refer to a property, investment or fund).
- 1.01 (b) Where applicable, this Manual includes concepts that are believed to be consistent with the spirit of the Global Investment Performance Standards (GIPS[®]) that are promulgated by the CFA Institute. However, currently the GIPS[®] focus is on composite performance presentation standards for prospective clients and not on reporting to existing investors (the terms “investors” and “clients” will be used interchangeably throughout this Manual). This manual will provide guidance to address the needs of existing clients for more consistent, complete and relevant investment reporting. Client performance reports need to communicate clearly and accurately all information needed by the client to understand the fund’s return and risk profile.
- 1.01 (c) This Manual provides detailed calculation instructions on property level, investment level and fund level time weighted returns, IRRs, equity multiples and other metrics, and also includes a list of performance disclosures and a sample performance presentation.
- 1.01 (d) The publication of these detailed return formulas should help to promote transparency and calculation consistency throughout the industry.
- 1.01 (e) One of the fundamental tenets of any performance measurement calculation is that the returns follow the accounting. In other words, the input data that is used to calculate the various performance metrics described in this Manual should come directly from the entity’s financial statements. It is assumed that financial statements are prepared in accordance with Fair Value Generally Accepted Accounting Principles (FV GAAP) that are described in Chapter 2 of REIS and its Appendix, the REIS Fair Value Accounting Policy Manual.

1.02 Organization of Manual

- 1.02 (a) This Manual is organized by topic, and each topic is further organized by return level (property, investment and fund level).

1.02 (b) The three levels used throughout the Manual are defined as follows:

- Property: A real estate asset
- Investment: A discrete asset or group of assets held for income, appreciation, or both and tracked separately¹ (primarily reflects the investor's economic ownership interest).
- Fund: A fund has one or more investments and includes all commingled funds and single-investor investment accounts. Please note that this term is applied more broadly in this Manual than it is in the NCREIF/Townsend Fund Indices which do not include single-investor investment accounts in their definition. The use of the term is consistent with the REIS standards.

1.02 (c) The chart below provides a quick reference to the main sections:

TWR Overview	P.8
Property Level TWRs	P.15
Investment Level TWRs	P.20
Fund Level TWRs	P.25
Money Weighted Returns (IRRs)	P.30
Equity Multiples	P.36
Other Performance Metrics	P.40
Computation Methodologies (Formulas)	P.44
Recommended Disclosures	P.54
Information Elements	P.58
Sample Presentations for Client Reporting	P.63

¹ Real Estate Information Standards. (2009) *Appendix 2 Real Estate Information Standards Glossary of Terms*.

- 1.02 (d) The detailed return formulas included in the Manual can generally be found in two separate places. First, the formulas are included in the text of the Manual with the specific topic they are covering. This allows the user to view each topic as a stand-alone section, and not have to turn to other sections for the details. Secondly, all the formulas have been compiled in the section labeled “Computation Methodologies” (Section 6).
- 1.02 (e) The sample presentations (Appendix A and B) and recommended disclosures (Section 7) that are included in the Manual are intended for illustrative purposes only and are not meant to reflect the only correct presentation.
- 1.02 (f) The section labeled “Performance Measurement Information Elements” (Section 8) includes a list of the financial elements that should be collected and retained by information providers as these elements are commonly used in the various return formulas.

2. Time-Weighted Returns

Overview of TWR

2.01 Definition

- 2.01 (a) A time-weighted return (TWR) can be defined as the geometric average of the holding period yields to an investment portfolio.² TWRs are commonly used in the investment industry to measure the performance of an investment manager. The TWR formulas isolate the performance of the investment earned by removing the timing effect of cash contributions and distributions from the investment's ending market value. In other words, TWRs measure how well a manager performed over the measurement period regardless of the size of the investment or timing of external cash flows.
- 2.01 (b) All TWR formulas are built in a similar manner, with a numerator and denominator that result in a percentage return. The numerators generally represent some measure of the absolute performance of the entity over the measurement period (quarterly NOI, monthly appreciation, etc). The denominators represent a measure of the entity's average size over that same time period (average fair market value of real estate, average net asset value, etc.).

2.02 Use of TWRs

- 2.02 (a) TWRs are the preferred performance measure to use when a manager does not have control over the cash flows of the investment. This lack of control is typically seen in open-end funds and non-discretionary single investor investment account portfolios. By removing the timing effect of cash flows from the formulas, TWRs provide a good measure of the manager's ability to manage an entity according to a specified strategy or objective. In addition, TWRs are preferred when valuation frequency is high and returns are linear, and when one needs to compare performance across multiple asset classes or industry benchmarks that are primarily TWR based. Conversely, when a manager does control the cash flows of the entity, as is the case in a closed-end fund or discretionary single investor investment account portfolio, other return measures including IRRs may provide additional insight.
- 2.02 (b) Within the industry, TWRs are calculated at three "levels": property, investment and fund. Regardless of the level, the TWRs all follow the same basic application principles that are described below. The actual financial elements that are used in the numerators and denominators of each TWR differ by level and are described in greater detail in further sections.
- 2.02 (c) Industry practice is to separate the total return into its two components, income return and appreciation return, for certain strategies. Specifically, REIS recommends that fund level component TWRs be presented in client reports for open-end funds.

² Investment Analysis and Portfolio Management, Seventh Edition (2003)

2.03 *Modified Dietz Method*

- 2.03 (a) The Modified-Dietz Method is the basic TWR formula that is widely used throughout the financial industry. When someone refers to a “time-weighted return formula” in general terms, they are most likely referring to the formula below.

$$R_{hp} = \frac{EMV - BMV +/- CF}{BMV + WCF}$$

R_{hp}	=	Return for the hold period
EMV	=	Ending market value of the investment
BMV	=	Beginning market value of the investment
CF	=	Net cash flows for the period
WCF	=	Sum of weighted cash flows for the period

- 2.03 (b) Ideally, a time-weighted return involves breaking the holding period into sub-periods bounded by each subsequent cash flow, then chain-linking the sub-period TWRs. By valuing the portfolio at the instant just prior to any cash flow, the sub-period return for the time period leading up to that cash flow occurrence can be calculated. By then re-valuing the portfolio considering the effect of such a cash flow, a new beginning value is created for computing the rate of return for the next sub-period. Since there are no cash flows within these sub-periods, the sub-period TWRs are simply (ending value – beginning value)/ beginning value.
- 2.03 (c) Given the computing power available nowadays, the only barrier to computing such an ‘ideal TWR’ is the availability of timely pricing, e.g., valuation information, when each cash flow occurs. For example, in the stock market, many participants now routinely perform such ideal TWRs by using end of day stock pricing.
- 2.03 (d) However, in markets where getting pricing data is problematic, such as with real estate, approximations are necessary. The most popular approximation for such markets is the Modified Dietz method, a method that has its origins in an earlier place and time when, even if timely prices were available, computing power was limited. It allows the placement of sub-period boundaries at dates when valuation data will be available, e.g., quarterly. Within these sub-periods, if a cash flow occurs, an implicit constant rate of return before and after is effectively assumed by time-weighting the cash flows in the denominator by the fraction of the sub-period duration that the cash flows affects the portfolio.
- 2.03 (e) If there is a material amount of volatility in values during the sub-period or the cash flows are large, the user should break the sub-period into two pieces, thus forcing a revaluation of the portfolio at the breakpoint. GIPS[®] allows users to decide their own acceptable level of precision. In most markets, a cash flow greater than 10% of the pre-cash flow portfolio value is considered to cause excess imprecision. In real estate, sub-periods are only 3 months long and thus sub-period volatility is typically immaterial. A Modified Dietz approximation will likely be appropriate, except when there is either a large partial sale or a single, substantial capital improvement expenditure. Nevertheless, GIPS[®] presently permits the real estate sector

to use these quarterly sub-periods, decide on what is precise enough and employ such a Modified Dietz approximation within each quarter.

- 2.03 (f) It is noted that the NCREIF property level return formulas are simply a slight, further approximation of Modified Dietz methodology wherein, rather than time-tagging the cash flows to the nearest day, contributions (for capital improvements) are assumed to always be made mid-quarter and distributions (of NOI) are assumed to be made monthly.
- 2.03 (g) The Modified Dietz Method provides a measure of the total return for the entity over the measurement period and is used as a building block for the more detailed formulas that are commonly used in the industry which will be described in greater detail in further sections. Specifically the Modified Dietz Method provides for an approximation of the IRR for the measurement period without the need for daily valuation and return calculation.

Application of TWRs

2.04 Cumulative Returns

- 2.04 (a) Since valuations are performed quarterly, and since the Modified Dietz approximation within such a short sub-period will almost always be adequate (given the nature of real estate cash flows), the standard building block for computing real estate sub-period TWRs is the quarter. Building blocks less than a quarter, for instance monthly, can also be used assuming the valuation cycle matches the building block. In the U.S., monthly valuations are currently rare; hence the quarter is almost exclusively used. Returns for periods longer than a single quarter, known as cumulative returns (not annualized), can be calculated by geometrically linking all of the quarterly returns within the measurement period. This geometric linking is applied uniformly to all of the quarterly sub-periods within the cumulative period, even the partial periods that usually occur in the entity’s acquisition and disposition quarter. TWRs do not require equal length sub-periods to calculate cumulative returns correctly. The geometrically linked calculation of TWRs results in a compounded rate of return.

$$R_{hp} = [(1 + R_1) * (1 + R_2) * (1 + R_3) \dots (1 + R_n)] - 1$$

R_{hp} = Return for the hold period

$R_{1\dots n}$ = Quarterly return for period 1 through n

- 2.04 (b) In the geometrically linked cumulative return formula above, each quarterly return in the period has an equal weighting. The timing of the return and the amount invested for an individual period will have no impact on the multi-period return. In other words, every period counts as much as every other period, regardless of the entity’s size in a TWR.
- 2.04 (c) An example of an eight quarter cumulative return is included below. Please note that arithmetic return for this period would be 20%, (2.5% x 8), however the compounding effect introduced by geometrically linking the returns results in an additional 1.8% of return for an ending value of 21.8%.

Cumulative Return Example (Not Annualized)

		Return	(Return/100) + 1
Start	Quarter 1	2.5%	1.025
	Quarter 2	2.5%	1.025
	Quarter 3	2.5%	1.025
	Quarter 4	2.5%	1.025
	Quarter 5	2.5%	1.025
	Quarter 6	2.5%	1.025
	Quarter 7	2.5%	1.025
End	Quarter 8	2.5%	1.025

Cumulative Return	21.8%
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$$[(1.025)*(1.025)*(1.025)*(1.025)*(1.025)*(1.025)*(1.025)*(1.025)]-1 = .218 = 21.8\%$$

2.05 Annualization

2.05 (a) In the financial industry, investors and managers tend to think in terms of annual rates of return. The industry standard is to annualize all cumulative returns that contain four or more full quarters. Cumulative returns can be annualized using the following formula:

$$AR_{hp} = [(1 + R_{hp}) ^{(365/DHP)}] - 1$$

- AR_{hp} = Annualized return for the measurement period
- R_{hp} = Return for the measurement period (non-annualized)
- DHP = Number of days in the measurement period

- 2.05 (b) The annualization factor shown in the formula above uses number of days in the measurement period. If all of the sub-periods are full quarters or full months, then it is also acceptable to use (4 / Number of quarter in the hold period) or (12 / Number of months in the hold period), respectively. The NCREIF NPI and NCREIF/Townsend Fund Level Indices use (4 / Number of quarters).
- 2.05 (c) Annual returns that cover more than one year (e.g. a five year return) represent the average annual return over the cumulative period. An example of an eight quarter cumulative annualized return using the same 2.5% quarter return that was seen in the previous example is included below.

Cumulative Return Example (Annualized)

		Return	(Return/100) +1
Start	1/1/2006 Quarter 1	2.5%	1.025
	Quarter 2	2.5%	1.025
	Quarter 3	2.5%	1.025
	Quarter 4	2.5%	1.025
	Quarter 5	2.5%	1.025
	Quarter 6	2.5%	1.025
	Quarter 7	2.5%	1.025
End	12/31/2007 Quarter 8	2.5%	1.025
# Days	730		
	Annualized Cumulative Return		10.4%

$$\{[(1.025)*(1.025)*(1.025)*(1.025)*(1.025)*(1.025)*(1.025)*(1.025)]^{(365/730)}-1\} = .104 = 10.4\%$$

2.05 (d) For further discussion on the mathematics of annualization, please refer to Appendix 7 of the *NCREIF Data Collection and Reporting Procedures Manual*.

2.06 Grouping Entities

2.06 (a) In this Manual, the term “grouping” is used to describe the process of aggregating/disaggregating two or more entities (properties, investments or funds) to evaluate performance using the time-weighted return. In this sense, the grouping guidance below can be applied very broadly to any collection of entities and is not necessarily limited to composites as described in GIPS®. As an example, client performance reporting often includes grouping of entities and the disaggregation of portfolios by property type and geographic region.

2.06 (b) TWR composites can be created to measure the performance of more than one entity. The mechanics for creating such a grouping are straight-forward. First, determine which entities will be included in the group and then compile the quarterly returns, including numerators and denominators for all entities. Add the numerators from each of the individual entities to create a group numerator. Add the denominators from each of the individual entities to create a group denominator. Then divide the group numerator by the group denominator to get the group quarterly return.

2.06 (c) An example of a group return containing five entities is listed below.

Group Return Example			
	Numerator	Denominator	Return
Property A	25	500	5.0%
Property B	100	10,500	1.0%
Property C	500	14,000	3.6%
Property D	100	5,000	2.0%
Property E	275	10,000	2.8%
Group	1,000	40,000	2.50%

2.06 (d) Group returns result in a weighted-average return based on relative entity size. In other words, the larger an entity, the more impact it will have on the group return.

2.06 (e) Group returns for cumulative periods should be calculated by first calculating the group return for each individual quarter within the cumulative period and then geometrically linking those

group quarterly returns using the same methodology described in the “Cumulative Returns” section above.

2.07 Component Return Issues

- 2.07 (a) When component returns are presented for any full individual quarter the sum of the income return plus the appreciation return will generally equal the total return. When component returns are geometrically linked to create cumulative compounded returns, the simple addition of the cumulative compounded income return plus the cumulative compounded appreciation return will not usually equal the cumulative compounded total return.
- 2.07 (b) NCREIF’s method for dealing with this inconsistency is to calculate the component returns as explained above and note the fact that the sum of the parts not equaling the total is normal and acceptable. The total return is precisely correct and the income and appreciation components are approximations. These approximations are deemed acceptable because applying the more precise cross compounding formula to the income and appreciation component returns would make the formulas very complex and the approximated results are not materially different.
- 2.07 (c) For further discussion on the issue, including more detailed analysis of the mathematics please refer to Appendix 7 of the *NCREIF Data Collection and Reporting Procedures Manual*.
- 2.07 (d) The consistency of presentation of financial information poses another issue to consider when analyzing component returns. Specifically, joint venture income and appreciation components can differ depending on the accounting reporting model used for the fund. In the non-operating reporting model, a joint venture is treated as an unconsolidated investment in a venture and only those amounts actually distributed to the fund is considered income. Any other undistributed accrued income as well as valuation changes will be included appreciation. In the Operating model, the joint venture may be consolidated and if so accrued income will be in the income component of the return and the appreciation component will contain only valuation changes, similar to a wholly owned property. Due to this potential inconsistency, a disclosure of the accounting reporting model used by the entity should accompany any component return presentation.

2.08 *Quarterly Property Level TWRs*

- 2.08 (a) Property level TWRs reflect the performance of an operating property or group of properties. The property level relates strictly to property operations and attempts to strip out all ownership level activity, usually including advisory fees, use of working capital and owner income and expenses. As such, property level TWRs do not represent investors' earnings from those properties, even in single property funds, but rather the earnings (in the form of appreciation and operating income) that are generated by the property.

2.09 *Leveraged vs. Unleveraged*

- 2.09 (a) Property level TWRs can be calculated on a leveraged or unleveraged basis.

Quarterly Unleveraged Property Level TWR

- 2.09 (b) Property level TWRs are usually reported on an unleveraged basis because not all properties are leveraged and those that are, are leveraged at varying levels which makes comparison of leveraged returns among different properties difficult in many cases. The NCREIF Property Index (NPI) is an unleveraged, property level index. The property level, unleveraged return formulas are as follows:

Net Operating Income Return (Unleveraged)

$$\frac{\text{NOI}}{\text{FV}_{t-1} + (1/2)(\text{CI} - \text{PSP}) - (1/3)(\text{NOI})}$$

Appreciation Return (Unleveraged)

$$\frac{(\text{FV}_t - \text{FV}_{t-1}) + \text{PSP} - \text{CI}}{\text{FV}_{t-1} + (1/2)(\text{CI} - \text{PSP}) - (1/3)(\text{NOI})}$$

Total Return (Unleveraged)

$$\frac{\text{NOI} + (\text{FV}_t - \text{FV}_{t-1}) + \text{PSP} - \text{CI}}{\text{FV}_{t-1} + (1/2)(\text{CI} - \text{PSP}) - (1/3)(\text{NOI})}$$

NOI = Net operating income (before interest expense)

CI =	Capital improvements
$FV_t =$	Fair value of property at end of period
$FV_{t-1} =$	Fair value of property at beginning of period
PSP =	Sales proceeds for partial sales (net of selling costs)

- 2.09 (c) Note that all three denominators in the formulas above are the same. In addition, the total return numerator is simply an addition of the net operating income and appreciation return numerator components. These two observations will hold true for all component TWRs that are calculated using the same parameters (i.e. leveraged property level, before fee investment level, etc.)

Net Operating Income Numerator (unleveraged)

- 2.09 (d) The net operating income (NOI) numerator is the net operating income (before interest expenses) that was reported by the property during the period. The NOI should be calculated on the accrual basis of accounting in accordance with the accounting standards explained in the REIS Standards (Chapter 2 and the Fair Value Accounting Policy Manual). Fund or investment level income and expenses should be excluded from NOI because the property level returns focus on property operations.

Appreciation Numerator (unleveraged)

- 2.09 (e) The appreciation numerator measures the change in property value not caused by capital improvements or sales. Property level financial statements should be prepared in accordance with Fair Value Generally Accepted Accounting Principles (FV GAAP) for return purposes and valuations should be completed on a quarterly basis in accordance with the valuation standards outlined in the REIS Standards (Chapter 1).

Denominator (unleveraged)

- 2.09 (f) Given that it is based on an approximation to IRR (see Section 2.04), the appropriate formula for the denominator of the unleveraged property return is an estimate of the average gross capital invested in the property over the quarter. This is calculated by adjusting the beginning real estate value of the property for real estate related items that would partially pay back, or add to, that initial investment.
- 2.09 (g) Capital improvements represent an addition to the capital invested in the property and so it is appropriate that they be added to the beginning market value in the denominator. Since we are calculating an average investment over the quarter, the capital improvements need to be weighted to reflect the actual amount of time that they were 'invested' during the period. The most precise way to do this would be to time weight each individual capital expenditure based on the number of days that it was in service during the quarter. This would be impractical

however, so it is simply assumed that all capital expenditures were added at mid-period and, hence, they are weighted at 1/2.

- 2.09 (h) The same logic applies for partial sales. Partial sales refer to the disposition of less than 100% of the property. For example, an out lot for a retail property or a single building in an industrial complex can be sold piecemeal, before the entire property is disposed. Partial sales represent a mid-period, partial repayment of the gross investment capital deployed at the beginning of the quarter. Rather than try to account for the exact day of any such partial sale(s), all partial sales may be assumed to occur at mid period and are therefore subtracted from the denominator with a weighting of 1/2.
- 2.09 (i) Net operating income is subtracted from the denominator based on the assumption that the (gross) capital employed should be reduced by any withdrawals of income. The 1/3 weighting is assigned because it is assumed that income is distributed evenly at the end of each month. The math is as follows:
- 1/3 of the income is distributed at the end of Month 1 and is outstanding for 2/3 of the quarter.
 - 1/3 of the income is distributed at the end of Month 2 and is outstanding for 1/3 of the quarter.
 - 1/3 of the income is distributed at the end of Month 3 and is outstanding for 0/3 of the quarter.
 - $(1/3 \times 2/3) + (1/3 \times 1/3) + (1/3 \times 0/3) = 1/3$.

Quarterly Leveraged Property Level TWR

- 2.09 (j) The leveraged property level TWR offers a more complete picture of the property performance since it includes the return for both debt and equity financing sources. The property level, leveraged return formulas are as follows:

Net Operating Income Return (Leveraged)

NOI - DSI

$$FV_{t-1} - D_{t-1} + (1/2)(CI - PSP) - (1/3)(NOI - DSI) + (1/3)(DSP) + (1/2)(PD - NL)$$

Appreciation Return (Leveraged)

$$(FV_t - FV_{t-1}) + PSP - CI - (D_t - D_{t-1} + DSP + PD - NL)$$

$$FV_{t-1} - D_{t-1} + (1/2)(CI - PSP) - (1/3)(NOI - DSI) + (1/3)(DSP) + (1/2)(PD - NL)$$

Total Return (Leveraged)

$$\frac{\text{NOI} - \text{DSI} + (\text{FV}_t - \text{FV}_{t-1}) + \text{PSP} - \text{CI} - (\text{D}_t - \text{D}_{t-1} + \text{DSP} + \text{PD} - \text{NL})}{\text{FV}_{t-1} - \text{D}_{t-1} + (1/2)(\text{CI} - \text{PSP}) - (1/3)(\text{NOI} - \text{DSI}) + (1/3)(\text{DSP}) + (1/2)(\text{PD} - \text{NL})}$$

NOI = Net operating income (before interest expense)

DSI = Debt service interest expense

FV_t = Fair value of property at end of period

FV_{t-1} = Fair value of property at beginning of period

CI = Capital improvements

D_t = Fair value of debt at end of period

D_{t-1} = Fair value of debt at beginning of period

DSP = Debt service principal payments

PD = Additional principal debt payments

NL = New loan proceeds

PSP = Net sales proceeds for partial sales

2.09 (k) All of the leveraged formulas listed above begin with the unleveraged formulas and layer in data elements to account for the debt.

Net Operating Income Numerator (leveraged)

2.09 (l) The net operating income return numerator begins with NOI (as detailed in 2.12(d)) and subtracts debt service interest expense.

Appreciation Numerator (leveraged)

2.09 (m) The leveraged appreciation formula begins with the real estate appreciation calculation and adds a debt appreciation calculation to arrive at total appreciation (real estate + debt). The REIS standards require debt to be reported at fair value.

Denominator (leveraged)

2.09 (n) The denominator for the leveraged property level TWRs is the property's weighted average equity over the quarter. Since property level returns focus on property operations and ignore

the use of working capital, the measure of property value is defined as average real estate value less average debt value adjusted for cash flow items that affect the real estate and debt.

- 2.09 (o) For the debt items, new debt loan proceeds and additional principal debt payments (i.e. balloon payments, debt pay-offs and other non-scheduled debt payments) are assumed to occur mid-period following the same logic employed for capital expenditures and partial sales, so they are weighted at 1/2. New loan proceeds are subtracted because they result in an increase to the beginning debt value and debt payments are added because they result in a decrease to the beginning balance. Another way of looking at it is that new loan proceeds result in a cash inflow to the property which is then distributed and therefore a reduction of equity. Debt payments are funded by contributions and therefore result in an increase of equity.
- 2.09 (p) Regularly scheduled principal payments are added back at 1/3 based on the assumption that the principal payments are made evenly at the beginning of each month and the assumed contribution is received at the end of each month. The math is the same as the 1/3 used for the NOI deduction.
- 1/3 of the principal is paid at the beginning of Month 1 and is outstanding for 2/3 of the quarter.
 - 1/3 of the principal is paid at the beginning of Month 2 and is outstanding for 1/3 of the quarter.
 - 1/3 of the principal is paid at the end of Month 3 and is outstanding for 0/3 of the quarter.
 - $(1/3 \times 2/3) + (1/3 \times 1/3) + (1/3 \times 0/3) = 1/3$.

2.10 Investment Level TWRs

- 2.10 (a) Investment level TWRs reflect the performance of a single investment or group of investments, whether that investment is wholly-owned or a joint venture. Investment level TWRs differ from property level in that the full scope of the investment, including ownership level activity (use of working capital, owner expenses, etc), is included in the calculation.

2.11 Before Fee vs. After Fee

- 2.11 (a) Investment level returns are generally required to be presented or reported in two forms – before investment management fees (also known as pre-fee or gross of fees) and after investment management fees (also known as post-fee or net of fees). For return purposes, fees typically include advisory fees and incentive fees that are paid to the investment manager. Fees generally do not include property management fees, construction management fees, or any other fees that are paid to the investment manager unless those fees are deemed to be over-market and paid in lieu of normal advisory or incentive fees. NCREIF recommends that acquisition and disposition fees should be included as advisory fees unless the fee is paid in lieu of a third party fee. In other words, if one of these transaction fees is paid to both the advisor and a third-party (at presumed market rates) than the fee paid to the advisor should be considered an advisory fee. Conversely, if the transaction fee is only paid to the advisor (at presumed market rates) than that transaction fee should not be considered an advisory fee. It is up to the advisor to make a determination based on the unique facts and circumstances of each transaction³ The formulas below define the calculation of quarterly investment level return on a before and after fee basis. If the advisor determines that transaction fees are indeed advisory fees, they would be included in the “AF” term in the formulas below.

Before Fee Investment Level TWR

Net Investment Income Return (Before Fee, Leveraged)

$$\text{NII} + \text{AF} + \text{IFE}$$

$$\text{NAV}_{t-1} + \text{TWC} - \text{TWD}$$

Appreciation Return (Before Fee, Leveraged)

$$\text{Real Estate Appreciation} + \text{Debt Appreciation}$$

$$\text{NAV}_{t-1} + \text{TWC} - \text{TWD}$$

³ NCREIF Performance Measurement Committee. (October 1998) *NCREIF Position on the Treatment of Advisor Fees*

Total Return (Before Fee, Leveraged)

$$\text{NII} + \text{AF} + \text{IFE} + \text{Real Estate Appreciation} + \text{Debt Appreciation}$$

$$\text{NAV}_{t-1} + \text{TWC} - \text{TWD}$$

NII =	Net investment income (after interest expense, advisory fees and expensed incentive fees)
AF =	Advisory fee expense
IFE =	Incentive fee expense
NAV _{t-1} =	Net asset value of investment at beginning of period
TWC =	Time weighted contributions
TWD =	Time weighted distributions

Net Investment Income Numerator (before fee, leveraged)

- 2.11 (b) The net investment income numerator is the net investment income (after interest expense) that was reported by the investment during the period. Please note that net investment income rather than net operating income is used for investment and fund level returns because net investment income is more complete in scope as it contains advisory fees and debt interest expense. The net investment income should be calculated on the accrual basis of accounting in accordance with the accounting standards outlined in the REIS Standards (Chapter 2 and the Fair Value Accounting Policy Manual). Net investment income is reported after advisory and incentive fees so those items need to be added back to the numerator to calculate a before fee return.

Appreciation Numerator (before fee, leveraged)

- 2.11 (c) The appreciation numerator measures the change in investment value not caused by capital improvements, sales, or refinancing. Real estate and debt should be reported in accordance with the fair value accounting standards outlined in the REIS Standards (Chapter 2) and valuations should be completed on a quarterly basis in accordance with the valuation standards outlined in the REIS Standards (Chapter 1). Appreciation included in the leveraged numerator should include both realized and unrealized real estate and debt appreciation.

Denominator (before fee, leveraged)

- 2.11 (d) The denominator for the investment level TWR is the weighted average equity of the investment over the quarter. Weighted average equity is calculated by adjusting the beginning

of quarter net asset value for equity transactions (contributions and distributions) that occur during the quarter.

- 2.11 (e) Each contribution or distribution that occurs during the period needs to be time weighted by multiplying it by a time weighting factor based on the date of the transaction. For return purposes, contributions include original contributions as well as reinvestments of capital and distributions include both operating and return of capital distributions. The initial contribution for the investment is not weighted (or it can be thought of as weighted at 100%). The denominator is the actual number of days that the investment was active during the period. Usually, the denominator will equal the total number of days in the quarter, however if the transaction is either the very first or last transaction for the investment, then the denominator is adjusted to match the number of days the investment was active for the period. The numerator is the total number of days remaining in the period after the equity transaction occurs.

For Contributions: Contributions in the current quarter are weighted based upon the number of days the contribution was in the fund during the quarter commencing with the day the contribution was received.

For Example: Beginning Net Asset Value for 2Q 2008 \$10,000,000

Contribution of \$5,000,000 on 5/30/2008

Calculation: $5,000,000 * (32/91) = \$1,758,241.76$

Beginning NAV + Weighted Contribution = Denominator

$\$10,000,000 + \$1,758,241.76 = \$11,758,241.76$

For Distributions: Distributions in the current quarter are weighted based upon the number of days the distribution/withdrawal was out of the fund during the quarter commencing with the day following the date distribution/withdrawal was paid.

For Example: Beginning Net Asset Value for 2Q 2008 \$10,000,000

Distribution of \$5,000,000 on 5/30/2008

Calculation: $5,000,000 \times (31/91) = \$1,703,296.70$

Beginning NAV - Weighted Distribution = Denominator

$\$10,000,000 - \$1,703,296.70 = \$8,296,703.30$

Note: Another factor that impacts weighted average equity is cash redemptions/withdrawals by investors, which are not cash distributions but rather an investor's removal of all or part of its equity from the fund. Such equity transactions are weighted in a manner identical to the weighting of cash distributions described above.

After Fee Investment Level TWR

Net Investment Income Return (After Fee, Leveraged)

NII

$\text{NAV}_{t-1} + \text{TWC} - \text{TWD}$

Appreciation Return (After Fee, Leveraged)

Real Estate Appreciation + Debt Appreciation - IFC

$\text{NAV}_{t-1} + \text{TWC} - \text{TWD}$

Total Return (After Fee, Leveraged)

NII + Real Estate Appreciation + Debt Appreciation - IFC

$\text{NAV}_{t-1} + \text{TWC} - \text{TWD}$

NII =	Net investment income (after interest expense, advisory fees and expensed incentive fees)
IFC =	Change in capitalized incentive fee
NAV _{t-1} =	Net asset value of investment at beginning of period
TWC =	Time weighted contributions
TWD =	Time weighted distributions

- 2.11 (f) The investment management fees consist of the quarterly investment management fee that is charged by an advisor as well as any incentive fees earned by the advisor (and therefore do not include any fees paid to the G.P. including developer promotes). Other fees charged by the investment advisor, including property management fees, financing fees and development fees are typically not included as a fee when calculating an after fee return. In other words, the spread between before and after fee return does not include these items. Transaction fees including acquisition and disposition are explained in section 2.11 (a) above.
- 2.11 (g) Before and after fee investment level TWR denominators are the same because there is only one weighted average equity for the period. The contributions and distributions used in the denominators are always after fee and are not adjusted to be before fee even when calculating a before fee return.

Net Investment Income Numerator (after fee, leveraged)

- 2.11 (h) The after fee investment level net investment income numerator is the net investment income (after interest expense) that was reported by the investment during the period. Net investment income is already reported after advisory and incentive fees on the income statement, so no adjustment needs to be made for these items when calculating an after fee return.

Appreciation Numerator (after fee, leveraged)

- 2.11 (i) The after fee investment level appreciation numerator subtracts any change in capitalized incentive fee that was accrued during the quarter. Generally, incentive fees that are earned based on changes in an investment's fair value are recorded as unrealized appreciation and impact the appreciation return, and fees that result from meeting and exceeding operating result goals are expensed and impact the net investment income return.

2.12 Fund Level TWR's

- 2.12 (a) A fund level TWR (also referred to as account or portfolio level) is the aggregation of all of the investments made by the entity and the amounts earned or incurred which relate to the entity but are not specifically attributable to a particular investment⁴. Similar to investment level returns, the fund level TWRs are very broad in nature and try to capture all activity, which includes, but is not limited to, those revenues and expenses applicable to the fund, taken as a whole, such as audit and appraisal fees, interest income and portfolio borrowings. In essence, this return measures the performance of the manager in terms of how well the management team performed its specified strategy.

2.13 Before Fee vs. After Fee

- 2.13 (a) The REIS Standards require quarterly reporting of fund level total TWR before and after fees for all Funds, and additionally recommends component returns (income, appreciation and total), before and after fee, for all open-end funds. The formulas below define the calculation of quarterly fund level returns on a before and after fee basis. For return purposes, fees include advisory fees and incentive fees that are paid to the investment manager (and therefore do not include fees paid to the G.P. including developer promotes). Fees generally do not include property management fees, construction management fees, or any other fees that are paid to the investment manager unless those fees are deemed to be over-market and paid in lieu of normal advisory or incentive fees. NCREIF recommends that acquisition and disposition fees should be included as advisory fees unless the fee is paid in lieu of a third party fee. In other words, if one of these transaction fees is paid to both the advisor and a third-party (at presumed market rates) than the fee paid to the advisor should be considered an advisory fee. Conversely, if the transaction fee is only paid to the advisor (at presumed market rates) than that transaction fee should not be considered an advisory fee. It is up to the advisor to make a determination based on the unique facts and circumstances of each transaction⁵. The formulas below define the calculation of quarterly investment level returns on a before and after fee basis. If the advisor determines that transaction fees are indeed advisory fees, they would be included in the "AF" term in the formulas below.

Before Fee Fund Level TWR

Net Investment Income Return (Before Fee, Leveraged)

$$\text{NII} + \text{AF} + \text{IFE}$$

$$\text{NAV}_{t-1} + \text{TWC} - \text{TWD}$$

⁴ REIS Chapter 4

⁵ NCREIF Performance Measurement Committee. (October 1998) *NCREIF Position on the Treatment of Advisor Fees*

Appreciation Return (Before Fee, Leveraged)

Real Estate Appreciation + Debt Appreciation

$$\text{NAV}_{t-1} + \text{TWC} - \text{TWD}$$

Total Return (Before Fee, Leveraged)

NII + AF + IFE + Real Estate Appreciation + Debt Appreciation

$$\text{NAV}_{t-1} + \text{TWC} - \text{TWD}$$

NII =	Net investment income (after interest expense, advisory fees and expensed incentive fees)
AF =	Advisory fee expense
IFE =	Incentive fee expense
NAV_{t-1} =	Net asset value of fund at beginning of period
TWC =	Time weighted contributions
TWD =	Time weighted distributions

Net Investment Income Numerator (before fee, leveraged)

- 2.13 (b) The net investment income numerator is the net investment income (after interest expense) that was reported by the fund during the period. Please note that net investment income rather than net operating income is used for investment and fund level returns as net investment income is more complete in scope as it contains advisory fees and debt interest expense. The net investment income should be calculated on the accrual basis of accounting in accordance with the accounting standards outlined in the REIS Standards (Chapter 2 and the Market value Accounting Manual). Net investment income is reported after advisory and inventive so those items need to be added back to the numerator to calculate a before fee return.

Appreciation Numerator (before fee, leveraged)

- 2.13 (c) The appreciation numerator measures the change in the fund's value not caused by capital improvements, sales, or refinancing. Real estate and debt should be reported in accordance with the fair value accounting principles outlined in the REIS Standards (Chapter 2) for return purposes and valuations should be completed on a quarterly basis in accordance with the valuation standards outlined in the REIS Standards (Chapter 1). Appreciation included in the

leveraged numerator should include both realized and unrealized real estate and debt appreciation

Denominator (before fee, leveraged)

- 2.13 (d) The denominator for the fund level TWR is the fund's weighted average equity over the quarter. Weighted average equity is calculated by adjusting the beginning of quarter net asset value for equity transactions (contributions and distributions) that occur during the quarter.
- 2.13 (e) Each contribution or distribution that occurs during the period needs to be time weighted by multiplying it by a time weighting factor based on the date of the transaction. For return purposes, contributions include original contributions as well as reinvestments of capital and distributions include both operating and return of capital distributions. The initial contribution for the investment is not weighted (or it can be thought of as weighted at 100%). The denominator is the actual number of days that the investment was active during the period. Usually, the denominator will equal the total number of days in the quarter, however if the transaction is either the very first or last transaction for the investment, then the denominator is adjusted to match the number of days the investment was active for the period. The numerator is the total number of days remaining in the period after the equity transaction occurs.

For Contributions: Contributions in the current quarter are weighted based upon the number of days the contribution was in the fund during the quarter commencing with the day the contribution was received.

For Example: Beginning Net Asset Value for 2Q 2008 \$10,000,000

Contribution of \$5,000,000 on 5/30/2008

Calculation: $5,000,000 * (32/91) = \$1,758,241.76$

Beginning NAV + Weighted Contribution = Denominator

$\$10,000,000 + \$1,758,241.76 = \$11,758,241.76$

For Distributions: Distributions in the current quarter are weighted based upon the number of days the distribution/withdrawal was out of the fund during the quarter commencing with the day following the date distribution/withdrawal was paid.

For Example: Beginning Net Asset Value for 2Q 2008 \$10,000,000

Distribution of \$5,000,000 on 5/30/2008

Calculation: $5,000,000 * (31/91) = \$1,703,296.70$

Beginning NAV - Weighted Distribution = Denominator

$\$10,000,000 - \$1,703,296.70 = \$8,296,703.30$

Note: Another factor that impacts weighted average equity is cash redemptions/withdrawals by investors, which are not cash distributions but rather an investor's removal of all or part of its equity from the fund. Such equity transactions are weighted in a manner identical to the weighting of cash distributions described above.

After Fee Fund Level TWR

Net Investment Income Return (After Fee, Leveraged)

NII

$NAV_{t-1} + TWC - TWD$

Appreciation Return (After Fee, Leveraged)

Real Estate Appreciation + Debt Appreciation - IFC

$NAV_{t-1} + TWC - TWD$

Total Return (After Fee, Leveraged)

$$\text{NII} + \text{Real Estate Appreciation} + \text{Debt Appreciation} - \text{IFC}$$

$$\text{NAV}_{t-1} + \text{TWC} - \text{TWD}$$

NII =	Net investment income (after interest expense, advisory fees and expensed incentive fees)
IFC =	Change in capitalized incentive fee
NAV_{t-1} =	Net asset value of investment at beginning of period
TWC =	Time weighted contributions
TWD =	Time weighted distributions

- 2.13 (f) The investment management fees consist of the quarterly investment management fee that is charged by an advisor as well as any incentive fees (and therefore do not include any fees paid to the G.P. including developer promotes). Other fees earned by the investment advisor, including property management fees, financing fees and development fees are typically not layered in when calculating an after fee return. In other words, the spread between before and after fee returns does not include these items. Transaction fees including acquisition and disposition are explained in section 2.11 (a) above.
- 2.13 (g) Before and after fee fund level TWR denominators are the same because there is only one weighted average equity for the period. The contributions and distributions used in the denominators are always after fee and are not adjusted to be before fee even when calculated a before fee return.

Income Numerator (after fee, leveraged)

- 2.13 (h) The after fee fund level net investment income numerator is the net investment income (after interest expense) that was reported by the investment during the period. Net investment income is already reported after advisory and incentive fees on the income statement, so no adjustment needs to be made for these items when calculating an after fee return.

Appreciation Numerator (after fee, leveraged)

- 2.13 (i) The after fee investment level appreciation numerator subtracts any change in capitalized incentive fee that was accrued during the quarter. Generally, incentive fees that are earned based on changes in an investment's fair value are recorded as unrealized appreciation and impact the appreciation return, and fees that result from meeting and exceeding operating result goals are expensed and impact the net investment income return.

3. Money-Weighted Returns (IRRs)

3.01 Definition

3.01 (a) The internal rate of return (IRR) is the annualized implied discount rate (effective compounded nominal rate) that equates the present value of all of the appropriate cash inflows associated with an investment with the sum of the present value of all the appropriate cash outflows accruing from it and the present value of the unrealized residual portfolio.⁶ IRRs are commonly used in the investment industry to measure the performance of the investment (contrasted with TWRs which are used to measure the performance of the investment manager). The IRR is also known as:

- A “money-weighted” return because, unlike a TWR, the entity’s cash flows do impact the IRR formula.
- The rate of return that results in a net present value of zero.

3.02 Sample IRR Formula

3.02 (a) The IRR formula discounts Flows F_1 through F_x back to F_0 where: F_0 is the original investment; and F_1 through F_{x-1} are the net cash flows for each applicable period and F_x is the ending cash flow, if the entity has been fully liquidated or estimate residual value if the entity has not yet been liquidated.

$$F_0 + \frac{F_1}{1+IRR} + \frac{F_2}{(1+IRR)^2} + \frac{F_3}{(1+IRR)^3} + \dots + \frac{F_x}{(1+IRR)^x} = 0$$

3.03 Solution by Financial Calculator

3.03 (a) Numerical iterations can easily become cumbersome and inefficient. Therefore, using a financial calculator can simplify this process. Microsoft Excel contains two functions that can be used for this calculation: IRR and XIRR. Below is a comparison of these functions:

IRR

- User inputs a series of cash flows which are assumed to occur at equal intervals.
- Results in a rate “per period” regardless of whether these periods are days, months or years.
- Does not annualize the result.
- User has to adjust for this:
 - Assume quarterly cash flow: $(1+IRR)^4-1$
 - Assume monthly cash flow: $(1+IRR)^{12}-1$
 - Assume daily cash flow: $(1+IRR)^{365}-1$

⁶ REIS Chapter 4

XIRR

- User inputs multiple cash flows along with the date that each cash flow occurs.
- Relies on daily compounding
- Annualizes result.
- No user adjustment needed if the holding period is one full year or longer. If the holding period is less than a full year than the result must be de-annualized using the formula: $(1 + \text{Rate}\%)^{(\# \text{ days} / 365)} - 1$

- 3.03 (b) In certain cases, the IRR may not be able to be mathematically calculated which results in an error message displayed as “#NUM!” or “#DIV/0” by Microsoft Excel. If this occurs, the result should be shown as “n/a” and a footnote added to explain the invalid result.

3.04 Use of IRRs

- 3.04 (a) IRRs are generally regarded as a good measure of investment performance when the manager has control over the cash flows, since the timing and amount of those flows impact the IRR calculation. In the real estate industry this is most typically seen in closed-end funds and discretionary single investor investment accounts. GIPS® has mandated IRR calculations for private equity and has recommended them for real estate. The Exposure Draft of the 2010 GIPS® includes a proposed requirement for disclosing since inception IRRs for closed-end real estate funds.
- 3.04 (b) The cash flows used in the IRR calculation will vary depending on the level of return that one is calculating, but should be aggregated quarterly at a minimum. All of the IRRs mentioned below can be calculated either before or after fees by simply incorporating the applicable fee items during the actual period in which the fees occur. The most precise way to incorporate fees is to use the actual fee payment date (however if advisory fees are paid on a regular basis (i.e. quarterly), using the date that the fee is accrued is also acceptable if it does not result in a material difference in the IRR calculation). The cash payment date should always be used for incentive fees as they are generally material. The method used (cash or accrual) should be disclosed. GIPS® specifically discourages the practice of simply subtracting the cumulative fees paid from the ending residual value as this treatment delays recognition of the management fees and artificially increases the rate of return.⁷
- 3.04 (c) Often times, a closed-end fund will use a credit facility to fund initial operations thus delaying the first capital cash flow. To the extent that those initial operations include the payment of fees, the since inception fees would be incorporated as negative cash flows on the date of the initial cash flow

3.05 Property Level IRRs

- 3.05 (a) At the property level, the inputs for the IRR formula are based on property cash flows, which serve as surrogates to the actual cash flows between the property and investors.
- 3.05 (b) In general, the IRR calculation should start with the initial cash flow on the property’s acquisition date and end with the final cash flow on the property’s disposition date. If the property has not yet been liquidated, the ending cash flow will be estimated using the fair value at the IRR calculation date.

⁷ CFA Institute. (2006) *Global Investment Performance Standards Handbook (Second Edition)*.

Unleveraged Property Level IRR

- 3.05 (c) The initial cash flow for the unleveraged IRR calculation is the total amount that is paid for the acquisition (before debt) which should include the property's purchase price plus acquisition costs. This is depicted as a negative cash flow in the calculation.
- 3.05 (d) Other cash flows over the life of the property include the property's quarterly net operating income (before interest expense) less capital improvements. Net operating income is depicted as a positive cash flow while net operating loss and capital improvements are shown as negative cash flows in the calculation.
- 3.05 (e) The ending cash flow is the property's final real estate sale proceeds (before debt payoff), if property has been sold. If the property has not yet been liquidated, the fair value of real estate less estimated costs to sell at the IRR calculation date should be used as the ending residual value. The ending value is shown as a positive cash flow in the calculation.

Leveraged Property Level IRR

- 3.05 (f) The initial cash flow is the property's purchase price, less initial debt balance. The net amount is shown as a negative cash flow in the calculation.
- 3.05 (g) Other cash flows over the life of the property include the property's net operating income less capital improvements less debt service payments (principal and interest). Net income is depicted as a positive cash flow while net loss, capital improvements, and debt service payments (principal and interest) are shown as negative cash flows in the calculation. In addition, new debt placed on a property after acquisition is treated as a positive cash flow in the calculation.
- 3.05 (h) The ending cash flow is the property's final real estate sale proceeds after debt payoff amount, if property has been sold. If the property has not yet been liquidated, the ending fair value of real estate less estimated sales costs less ending fair value of debt at the IRR calculation date should be used as the ending residual value. The net amount is shown as a positive cash flow in the calculation.

3.06 Investment Level IRRs

- 3.06 (a) At the investment level, the inputs for the IRR formula are based on the actual cash flows between the investor and the investment. The IRR for each individual investor may actually be different if the investor's transactions occur on different dates.
- 3.06 (b) In general, the IRR calculation for each investor should start with the initial cash flow on the date of the investor's first capital contribution and end with the final cash flow on the date that the investor received his final distribution. If the investment has not yet been liquidated, the ending cash flow will be estimated using the investment net asset value at the IRR calculation date.
- 3.06 (c) Investment level IRRs are typically only shown on a leveraged basis because the leveraged amount represents the return that the investor is actually realizing and it is difficult to strip leverage out of actual contributions and distributions.

Leveraged Investment Level IRR

- 3.06 (d) The initial cash flow is the investor's first contribution. This is shown as a negative cash flow in the calculation.
- 3.06 (e) Other cash flows over the life of the investment include actual contributions (including reinvestments) and distributions (both operating and return of capital) between the investor and the investment. Contributions are shown as negative cash flows and distributions are positive cash flows in the calculation.
- 3.06 (f) The ending cash flow is the investor's final liquidating distribution, if the investment has been liquidated. If the investment has not yet been liquidated, the ending net asset value of the investment less estimated sales costs at the IRR calculation date should be used as the residual value. The net amount is shown as a positive cash flow in the calculation.

3.07 Fund Level IRRs

- 3.07 (a) At the fund level, the inputs for the IRR formula are based on the actual cash flows between the investors and the fund. General partner cash flows are not included in this calculation. Where an affiliate of the general partner is created for co-investment purposes, the affiliate entity would be included in the calculation as long as the entity is treated the same as other limited partners.
- 3.07 (b) In general, the IRR calculation should start with the initial cash flow on the date of the first capital contribution and end with the final cash flow on the date that of the final liquidating distribution. If the fund has not yet been liquidated, the ending cash flow will be estimated using the fund's net asset value at the IRR calculation date.
- 3.07 (c) Fund level IRRs are typically only shown on a leveraged basis because the leveraged amount represents the return that the investor is actually realizing and it is difficult to strip leverage out of actual contributions and distributions.

Leveraged Fund Level IRR

- 3.07 (d) The initial cash flow is the first investor's contribution. This is shown as a negative cash flow in the calculation.
- 3.07 (e) Other cash flows over the life of the fund include actual contributions and distributions (both operating and return of capital) between the investors and the fund. Contributions are shown as negative cash flows and distributions are positive cash flows in the calculation.
- 3.07 (f) The ending cash flow is the final liquidating distribution made to the investors, if the fund has been liquidated. If the fund has not yet been liquidated, the ending net asset value of the investment less estimated sales costs at the IRR calculation date should be used as the residual value. The net amount is shown as a positive cash flow in the calculation.

4. Equity Multiples

4.01 Definition

- 4.01 (a) In general terms, an equity multiple is a performance metric that measures a certain aspect of an entity's financial performance. Multiples are shown as ratios, with one financial input in the numerator and another in the denominator, both of which are typically presented for the entire life of the investment rather than some discrete time period (month, quarter, etc).

4.02 Use of Multiples

- 4.02 (a) When used in conjunction with time-weighted returns and IRRs, multiples provide greater transparency when analyzing performance. The four commonly used multiples required for private equity reporting disclosures for GIPS[®]-compliant firms (Sec. II.7.A.22) are presented below. Although multiples are not a current requirement in the GIPS[®] standards for real estate, GIPS[®] does recommend presenting multiples as useful information for prospective and existing clients (Sec. II.6.B.7.c). The Exposure Draft of the 2010 GIPS[®] includes proposed requirements for disclosing these multiples on closed-end real estate funds.

4.03 Note on Fees

- 4.03 (a) Multiples listed below are presumed to be shown after all fees, including acquisition, asset management, disposition, incentive fees and carried interest/promotes. Fees paid outside of the fund should also be taken into consideration for these calculations. In order to estimate before fee multiples, the ratios would need to be adjusted. Distributions would be increased for cumulative fees, and capital contributions would be reduced for fees contributed. Residual values would also be adjusted for any fee accruals or allocations.

4.04 Investment Multiple or Total Value to Paid-In Capital Multiple (TVPI)

- 4.04 (a) This investment multiple gives prospective clients information regarding the value of the investment relative to its cost basis, not taking into consideration the time invested. As an example, a multiple equal to 1.50 is typically read as the investors have \$1.50 of value in the fund for every \$1 invested.

TV

PIC

TV = Total Value

Fund: Sum of residual fund net assets (NAV) plus aggregate fund distributions

Investment: Sum of residual investment net assets (NAV) plus aggregate distributions

Property: Sum of property fair value (net of debt) plus aggregate distributions paid since inception (note: if actual property distributions are not separately maintained, estimates can be calculated by aggregating the property's net operating income (after interest expense) and subtracting principal payments and capital improvements).

PIC = Paid In Capital

Fund: Cumulative capital contributed to the fund

Investment: Cumulative capital contributed to the investment

Property: Cash invested in the property (cash at acquisition plus capital additions)

4.05 Realization Multiple or Cumulative Distributions to Paid-In Capital Multiple (DPI)

- 4.05 (a) The DPI measures what portion of the return has actually been returned to the investors. The DPI will be zero until distributions are made. As the fund matures, typically the DPI will increase. When the DPI is the equivalent of one, the fund has broken even. Consequently, a DPI of greater than one suggests the fund has generated profit to the investors.

D

PIC

D = Total Distributions

Fund: Aggregate fund distributions paid since inception

Investment: Aggregate investment distributions paid since inception

Property: Aggregate property distributions paid since inception (note: if actual property distributions are not separately maintained, estimates can be calculated by aggregating the property's net operating income (after interest expense) and subtracting principal payments and capital improvements).

PIC = Paid In Capital

Fund: Cumulative capital contributed to the fund
Investment: Cumulative capital contributed to the investment
Property: Cash invested in the property (cash at acquisition plus capital additions)

4.06 Paid-In Capital to Committed Capital Multiple (PIC)

- 4.06 (a) This ratio gives information regarding how much of the total commitments have been drawn down.
- 4.06 (b) The paid in capital is the cumulative drawdown amount, or the aggregate amount of committed capital actually transferred to a fund or property. Typically a number such as .80 is read as 80% of the fund's capital commitments have been drawn from investors.

PIC

CC

PIC = Paid In Capital

Fund: Cumulative capital contributed to the fund
Investment: Cumulative capital contributed to the investment
Property: Cash invested in the property (cash at acquisition plus capital additions)

CC = Committed Capital

Fund: Cumulative fund PIC plus unfunded capital
Investment: Cumulative investment PIC plus unfunded capital
Property: Cumulative property PIC plus unfunded commitments (e.g. renovation reserves)

4.07 Residual Value to Paid-In Capital (RVPI)

- 4.07 (a) This ratio provides a measure of how much of the return is unrealized. As the fund matures, the RVPI will increase to a peak and then decrease as the fund eventually liquidates to a residual market value of zero. At that point, the entire return of the fund has been distributed.
- 4.07 (b) Residual value is defined as remaining equity in fund or property. An RVPI of .70 would indicate an amount equal to 70% of the fund's paid-in capital remains unrealized.

RV

PIC

RV = Residual Value

Fund: Net asset value (NAV) of the fund

Investment: Net asset value (NAV) of the investment

Property: Property fair value net of debt

PIC = Paid In Capital

Fund: Cumulative capital contributed to the fund

Investment: Cumulative capital contributed to the investment

Property: Cash invested in the property (cash at acquisition plus capital additions)

5. Other Performance Metrics

5.01 Disaggregated Income Returns

- 5.01 (a) Distributed and retained income returns refer to the division of time-weighted income returns into two separate components. The dividend policy of the fund should be considered when calculating and interpreting the results of the return metrics below as each can be materially impacted. Please note that the aggregate dollar amount of distributed income plus retained income will equal total income.

Distributed Income Return

- 5.01 (b) Distributed income is defined as the amount of investment income derived from operations that is 1) actually distributed to investors or 2) credited to investors in the case of investment fund dividend or income reinvestment programs that are elected by the investor. (Mandatory reinvestment programs or automatic cash retention programs are not considered elective by the investor). Distributed income does not include the return of capital or principal, the distribution of realized gains from asset sales (capital gains) nor proceeds from financing activities. The objective is to present the actual cash distributions that are derived from customary and ongoing investment management operations without the distortions related to disposition and refinancing activities.
- 5.01 (c) The distributed income formula is defined below:

Distributed Income Formula

Distributed Income

Weighted Average Equity

- 5.01 (d) The weighted average equity is defined below:

Weighted Average Equity = Beginning Net Assets + Weighted Contributions – Weighted Distributions

Weighted Contributions and Distributions = $\sum (F_i * W)$ where F_i is each cash flow (contribution and distribution) and W is a fraction, where the denominator is the total number of days in the period and the numerator is as follows:

- For Contributions - the number of days remaining in the period including the day of the contribution.
- For Distributions - the number of days remaining in the period after the date of the distribution.

Retained Income Return

- 5.01 (e) Retained income portion of the income return is considered materially different (in economic terms) from the distributed income portion. Retained income simply refers to the income that is earned by the entity that is not distributed. Retained income can be used in various strategic ways to manage the real estate portfolio, including but not limited to, debt repayment, acquisition of assets and capital expenditures on existing assets.
- 5.01 (f) The retained income formula is defined below:

Retained Income Formula

$$\frac{\text{Retained Income}}{\text{Weighted Average Equity}}$$

5.02 Leverage Ratios

- 5.02 (a) A real estate fund is subject to various risks including leverage risk. The leverage ratio is a ratio that indicates what proportion of debt a fund has relative to its assets. This measure shows stakeholders in the fund the level of fund leverage along with the potential risks the fund faces in terms of its debt-load.

Leverage / Debt Ratio

Total Debt

Total Assets

- 5.02 (b) A debt ratio of greater than one indicates that there is more debt than assets. A debt ratio of less than one indicates that there are more assets than debt. Used in conjunction with other measures of financial health, the debt ratio can help investors determine an entity's level of risk.
- 5.02 (c) Chapter 4 in REIS defines the two basic leverage ratios as follows:

Investment Company Guide Calculation (Non-Operating Model)

Wholly owned debt (property & fund) + fund's economic share of JV debt

Total assets + fund's share of total JV liabilities

Consolidated Balance Sheet Calculation (Operating Model)

Wholly owned debt (property & fund) + fund's economic share of JV debt

Total assets – JV partner economic share of RE Partnership Assets

- 5.02 (d) Other metrics can be used to evaluate individual loan information including DCR or Debt Service Coverage Ratio. This ratio measures the extent that the net operating income from property operations will exceed the mortgage payments.⁸ In the past, most lenders typically required a DCR of at least 1.20x. This would mean that the property's NOI is 20% higher than, or has a 20% buffer over, the amount it would take to meet its loan obligations.

$$\text{Debt Service Coverage} = \frac{\text{Net Operating Income (NOI)}}{\text{Debt Service Payments (principal \& interest)}}$$

5.03 Measures of Dispersion Within a Group

- 5.03 (a) Dispersion is defined as “a measure of the spread of the annual returns of individual portfolios within a composite” by the GIPS® Glossary.⁹ The CFA Institute (GIPS®) indicates that there are several acceptable measures of dispersion including high/low, interquartile range, and standard deviation. Measures of dispersion may include but are not limited to these methods. Another method can be chosen but it should fairly represent the range of returns for each annual period.

High / Low

- 5.03 (b) The simplest method of expressing the dispersion is to disclose the highest and lowest annual return earned by portfolios in a group for the entire year or in the case of a fund return highest and lowest annual return earned by investments in the fund for the entire year. It is also acceptable to present the high/low range, defined as the arithmetic difference between the highest and the lowest return. It is easy to understand the high/low disclosure but there is a potential disadvantage. If during any annual period there is an outlier (a portfolio or investment with an abnormally high or low return), then this presentation may not entirely represent the distribution of the returns. Other measures, which are more difficult to calculate and interpret, are statistically superior.

⁸ Brueggeman, William B and Fisher, Jeffery D. *Real Estate Finance and Investments*. 11th Edition. Boston, MA: McGraw-Hill Irwin, 2001.

⁹ Global Investment Performance Standards (GIPS®). As revised by the Investment Performance Council 7 December 2004 and adopted by the CFA Institute Board of Governors 4 February 2005. www.GIPSstandards.org

Interquartile

5.03 (c) Another dispersion measure named in the GIPS® Glossary is an interquartile range. An interquartile range is the difference between the return in the first and the third quartiles of the distribution. The distribution of returns is divided into quarters to create quartiles. The first quartile will have 25 percent of the observations falling at or above the first quartile. The third quartile will have 25 percent of the observations fall at or below it. So the interquartile range represents the length of the interval which contains the middle 50 percent of the observations (data). Since it does not contain extreme values, the interquartile range will not be skewed by outliers. The issue with this dispersion measure is that clients may not be familiar with the methodology used for the interquartile range. Another important drawback is that it only addresses half the data, almost surely ignoring significant dispersion that is not due to outliers.

Standard Deviation

5.03 (d) Standard deviation is the most commonly accepted measure of dispersion. In groups, the standard deviation measures the cross-sectional dispersion of returns to portfolios. Standard deviation for a group in which the constituent portfolios are equally weighted is:

$$S_c = \sqrt{\frac{\sum_{i=1}^n (r_i - \bar{r}_c)^2}{n-1}}$$

- where r_i is the return of each individual portfolio
- \bar{r}_c is the equal-weighted mean or arithmetic mean return of the portfolios in the group
- n is, the number of portfolios in the group.

5.03 (e) If the individual portfolio returns are normally distributed around the mean return, then approximately two-thirds of the portfolios will have returns falling between the mean plus the standard deviation and the mean minus the standard deviation.

5.03 (f) The standard deviation of portfolio returns is a valid measure of group dispersion. Most spreadsheet programs include statistical functions to facilitate the calculation, and many clients will have at least a passing acquaintance with the concept of a standard deviation.

5.03 (g) At a minimum, quarterly data points should be used for calculating the standard deviation since valuations are presumed to be completed on a quarterly basis. The resulting quarterly calculation should be annualized accordingly using the formula [Quarterly Result x 4 ^{^(1/2)}]. The NFI-ODCE only reports standard deviations for periods containing at least 20 full quarters (five years) as any measurements of smaller time periods are thought to produce results that are statistically insignificant.

6. Computation Methodologies

6.01 Quarterly Property Level Time-Weighted Returns

Net Operating Income Return (Unleveraged)

$$\frac{\text{NOI}}{\text{FV}_{t-1} + (1/2)(\text{CI} - \text{PSP}) - (1/3)(\text{NOI})}$$

Net Operating Income Return (Leveraged)

$$\frac{\text{NOI} - \text{DSI}}{\text{FV}_{t-1} - \text{D}_{t-1} + (1/2)(\text{CI} - \text{PSP}) - (1/3)(\text{NOI} - \text{DSI}) + (1/3)(\text{DSP}) + (1/2)(\text{PD} - \text{NL})}$$

Appreciation Return (Unleveraged)

$$\frac{(\text{FV}_t - \text{FV}_{t-1}) + \text{PSP} - \text{CI}}{\text{FV}_{t-1} + (1/2)(\text{CI} - \text{PSP}) - (1/3)(\text{NOI})}$$

Appreciation Return (Leveraged)

$$\frac{(\text{FV}_t - \text{FV}_{t-1}) + \text{PSP} - \text{CI} - (\text{D}_t - \text{D}_{t-1} + \text{DSP} + \text{PD} - \text{NL})}{\text{FV}_{t-1} - \text{D}_{t-1} + (1/2)(\text{CI} - \text{PSP}) - (1/3)(\text{NOI} - \text{DSI}) + (1/3)(\text{DSP}) + (1/2)(\text{PD} - \text{NL})}$$

Total Return (Unleveraged)

$$\frac{\text{NOI} + (\text{FV}_t - \text{FV}_{t-1}) + \text{PSP} - \text{CI}}{\text{FV}_{t-1} + (1/2)(\text{CI} - \text{PSP}) - (1/3)(\text{NOI})}$$

Total Return (Leveraged)

$$\frac{\text{NOI} - \text{DSI} + (\text{FV}_t - \text{FV}_{t-1}) + \text{PSP} - \text{CI} - (\text{D}_t - \text{D}_{t-1} + \text{DSP} + \text{PD} - \text{NL})}{\text{FV}_{t-1} - \text{D}_{t-1} + (1/2)(\text{CI} - \text{PSP}) - (1/3)(\text{NOI} - \text{DSI}) + (1/3)(\text{DSP}) + (1/2)(\text{PD} - \text{NL})}$$

NOI =	Net operating income (before interest expense)
DSI =	Interest expense
FV_t =	Fair value of property at end of period
FV_{t-1} =	Fair value of property at beginning of period
CI =	Capital improvements
D_t =	Fair value of debt at end of period
D_{t-1} =	Fair value of debt at beginning of period
DSP =	Debt service principal payments
PD =	Additional principal debt payments
NL =	New loan proceeds
PSP =	Net sales proceeds for partial sales

6.02 Investment Level Time-Weighted Returns

Net Investment Income Return (Before Fee, Leveraged)

$$\frac{\text{NII} + \text{AF} + \text{IFE}}{\text{NAV}_{t-1} + \text{TWC} - \text{TWD}}$$

Net Investment Income Return (After Fee, Leveraged)

$$\frac{\text{NII}}{\text{NAV}_{t-1} + \text{TWC} - \text{TWD}}$$

Appreciation Return (Before Fee, Leveraged)

$$\frac{\text{Real Estate Appreciation} + \text{Debt Appreciation}}{\text{NAV}_{t-1} + \text{TWC} - \text{TWD}}$$

Appreciation Return (After Fee, Leveraged)

$$\frac{\text{Real Estate Appreciation} + \text{Debt Appreciation} - \text{IFC}}{\text{NAV}_{t-1} + \text{TWC} - \text{TWD}}$$

Total Return (Before Fee, Leveraged)

$$\frac{\text{NII} + \text{AF} + \text{IFE} + \text{Real Estate Appreciation} + \text{Debt Appreciation}}{\text{NAV}_{t-1} + \text{TWC} - \text{TWD}}$$

Total Return (After Fee, Leveraged)

$$\frac{\text{NII} + \text{Real Estate Appreciation} + \text{Debt Appreciation} - \text{IFC}}{\text{NAV}_{t-1} + \text{TWC} - \text{TWD}}$$

NII =	Net investment income (after interest expense, advisory fees and expensed incentive fees)
AF =	Advisory fee expense
IFE =	Incentive fee expense
IFC =	Change in capitalized incentive fee
NAV_{t-1} =	Net asset value of investment at beginning of period
TWC =	Time weighted contributions
TWD =	Time weighted distributions

6.03 Fund Level Time-Weighted Returns

Net Investment Income Return (Before Fee, Leveraged)

$$\frac{\text{NII} + \text{AF} + \text{IFE}}{\text{NAV}_{t-1} + \text{TWC} - \text{TWD}}$$

Net Investment Income Return (After Fee, Leveraged)

$$\frac{\text{NII}}{\text{NAV}_{t-1} + \text{TWC} - \text{TWD}}$$

Appreciation Return (Before Fee, Leveraged)

$$\frac{\text{Real Estate Appreciation} + \text{Debt Appreciation}}{\text{NAV}_{t-1} + \text{TWC} - \text{TWD}}$$

Appreciation Return (After Fee, Leveraged)

$$\frac{\text{Real Estate Appreciation} + \text{Debt Appreciation} - \text{IFC}}{\text{NAV}_{t-1} + \text{TWC} - \text{TWD}}$$

Total Return (Before Fee, Leveraged)

$$\frac{\text{NII} + \text{AF} + \text{IFE} + \text{Real Estate Appreciation} + \text{Debt Appreciation}}{\text{NAV}_{t-1} + \text{TWC} - \text{TWD}}$$

Total Return (After Fee, Leveraged)

$$\frac{\text{NII} + \text{Real Estate Appreciation} + \text{Debt Appreciation} - \text{IFC}}{\text{NAV}_{t-1} + \text{TWC} - \text{TWD}}$$

NII =	Net investment income (after interest expense)
AF =	Advisory fee expense
IFE =	Incentive fee expense
IFC =	Change in capitalized incentive fee
NAV_{t-1} =	Net asset value of investment at beginning of period
TWC =	Time weighted contributions
TWD =	Time weighted distributions

6.04 Sample IRR Formula

$$F_0 + \frac{F_1}{1+IRR} + \frac{F_2}{(1+IRR)^2} + \frac{F_3}{(1+IRR)^3} + \dots + \frac{F_x}{(1+IRR)^x} = 0$$

6.05 Investment Multiple or Total Value to Paid-in Capital Multiple (TVPI)

TV

PIC

TV = Total Value

Fund: Sum of residual fund net assets (NAV) plus aggregate fund distributions

Investment: Sum of residual investment net assets (NAV) plus aggregate distributions

Property: Sum of property fair value (net of debt) plus aggregate distributions (note: if actual property distributions are not separately maintained, estimates can be calculated by aggregating the property's net operating income (after interest expense) and subtracting principal payments and capital improvements).

PIC = Paid In Capital

Fund: Cumulative capital contributed to the fund

Investment: Cumulative capital contributed to the investment

Property: Cash invested in the property (cash at acquisition plus capital additions)

6.06 Realization Multiple or Cumulative Distributions to Paid-in Capital Multiple (DPI)

D

PIC

D = Total Distributions

Fund: Aggregate fund distributions paid since inception

Investment: Aggregate investment distributions paid since inception

Property: Aggregate property distributions paid since inception (note: if actual property distributions are not separately maintained, estimates can be calculated by aggregating the property's net operating income (after interest expense) and subtracting principal payments and capital improvements).

PIC = Paid In Capital

Fund: Cumulative capital contributed to the fund

Investment: Cumulative capital contributed to the investment

Property: Cash invested in the property (cash at acquisition plus capital additions)

6.07 Paid-in Capital to Committed Capital Multiple (PIC)

PIC

CC

PIC = Paid In Capital

Fund: Cumulative capital contributed to the fund

Investment: Cumulative capital contributed to the investment

Property: Cash invested in the property (cash at acquisition plus capital additions)

CC = Committed Capital

Fund: Cumulative fund PIC plus unfunded capital

Investment: Cumulative investment PIC plus unfunded capital

Property: Cumulative property PIC plus unfunded commitments (e.g. renovation reserves)

6.08 Residual Value to Paid-in Capital (RVPI)

RV

PIC

RV = Residual Value

Fund: Net asset value (NAV) of the fund

Investment: Net asset value (NAV) of the investment

Property: Property fair value net of debt

PIC = Paid In Capital

Fund: Cumulative capital contributed to the fund

Investment: Cumulative capital contributed to the investment

Property: Cash invested in the property (cash at acquisition plus capital additions)

6.09 Distributed Income Formula

$$\frac{\text{Distributed Income}}{\text{Weighted Average Equity}}$$

6.10 Retained Income Formula

$$\frac{\text{Retained Income}}{\text{Weighted Average Equity}}$$

6.11 Debt Ratio – Investment Company Guide Calculation (Non-Operating Model)

$$\frac{\text{Wholly owned debt (property \& fund) + fund's economic share of JV debt}}{\text{Total Assets + fund's share of total JV liabilities}}$$

6.12 Debt Ratio – Consolidated Balance Sheet Calculation (Operating Model)

$$\frac{\text{Wholly owned debt (property \& fund) + fund's economic share of JV debt}}{\text{Total Assets – JV partner economic share of RE Partnership Assets}}$$

6.13 Debt Service Coverage Ratio

$$\frac{\text{Net Operating Income (NOI)}}{\text{Debt Service Payments (principal and interest)}}$$

7. Sample Disclosures

7.01 (a) These disclosures are intended to be used in performance presentations for U.S., institutional real estate assets. The disclosures below should accompany any performance presentation that is made in a client report.

Property Level Disclosures

7.02 *Unleveraged Property Level Performance Return [EXAMPLE]*

- *Performance results are before the effect of leverage and calculated using the National Council of Real Estate Investment Fiduciaries (“NCREIF”) Property-Level return methodology.*
- *Performance results are before deduction of advisor asset management and performance incentive fees and after deduction of advisor acquisition fees.*
- *Performance results are before the effect of operating partner/joint venture partner fees and distribution waterfalls. (Only use if applicable.)*
- *Performance results do not include cash and cash equivalents, related interest income and other non-property related income and expenses.*
- *The inputs to the performance return calculation are calculated in accordance with the Real Estate Information Standards (“REIS”). The Net Operating Income component of the return is based on accrual recognition of earned income. Capital expenditures, tenant improvements, and lease commissions are capitalized and included in the cost of the property; are not amortized; and are reconciled through the valuation process and reflected in the capital return (appreciation) component.*
- *Annual performance returns are time-weighted, calculated by geometrically linking quarterly returns. Income and capital returns may not equal total returns due to compounding effects of linking the quarterly returns.*

7.02 (a) If a property level internal rate of return (“IRR”) is presented, a disclosure describing the calculation methodology is needed. Please refer to section 7.10 for a sample disclosure.

7.03 *Leveraged Property Level Performance Return [EXAMPLE]*

7.03 (a) Same as above (7.03) except for the first disclosure.

- *Performance results are after the effect of leverage and calculated using the National Council of Real Estate Investment Fiduciaries (“NCREIF”) Property-Level return methodology.*

7.04 Property Level Valuation Policy - [EXAMPLE]

7.04 (a) If presenting performance on a stand-alone basis (not in conjunction with financial statements) a valuation policy should be disclosed. Otherwise, reference can be made to the accompanying financial statement footnotes.

- *Real property assets are internally valued quarterly by the manager and appraised no less frequently than every three years by an independent member of the Appraisal Institute.*
- *Both the internal and external property valuations rely primarily on the application of market discount rates to future projections of unleveraged cash flows and capitalized terminal values over the expected holding period of each property.*
- *Property mortgages, notes, and loans with maturities greater than one year from the date of the balance sheet are marked to market using prevailing interest rates for comparable property loans. Loan repayment fees, if any, are considered in the projected year of sale.*

7.05 Property Level Benchmark Disclosure - [EXAMPLE]

- *The benchmark for this group is the National Council of Real Estate Investment Fiduciaries (“NCREIF”) Property Index (“NPI”).*
- *The NPI benchmark has been taken from published sources.*
- *The NPI is an unleveraged, before fee index of operating properties and, includes various operating real estate property types, excludes cash and other non-property related assets and liabilities, income, and expenses.*
- *The calculation methodology for the NPI is consistent with the calculation methodology for all properties presented herein.*
- *The NPI data, once aggregated, may not be comparable to the performance of the properties presented herein due to current and historical differences in portfolio composition by asset size, geographic location and property type.*

Investment Level Disclosures

7.05 (a) Investment level represents a discrete asset or group of assets held for income, appreciation, or both and tracked separately. Investment level performance is typically presented at the fund level. Please refer to Section 7.08, below, for disclosure guidance.

Fund Level Disclosures

7.06 Unleveraged Fund Level Performance Return [EXAMPLE]

Hypothetical, unleveraged fund returns are often presented as supplemental reporting. To calculate these returns, adjustments to the numerator are made which remove interest expense and appreciation related to the value of the debt. Adjustments to the denominator are made

which increase contributions and distributions by the amount of debt placed, loan fees incurred, interest expensed and debt repaid. The disclosures follow Section 7.03 except for the first bullet point, which is replaced with a description of the assumptions used to de-lever the portfolio.

7.07 Leveraged Fund Level Performance Return [EXAMPLE]

- *Performance results are denominated in U.S. dollars.*
- *Performance results are presented net of leverage.*
- *Performance results include cash and cash equivalents and related interest income.*
- *Net returns are after investment management fees and performance incentive fees. Annual investment management fees are 1% of invested capital. No incentive fees have been earned.*
- *Income return is based on accrual recognition of earned income.*
- *Capital expenditures, tenant improvements, and lease commissions are capitalized and included in the cost of the property; are not amortized; and are reconciled through the valuation process and reflected in the capital return component.*
- *Performance results are calculated on an asset-weighted average basis using beginning of period values adjusted for time-weighted external cash flows.*
- *Annual returns are time-weighted rates of return calculated by linking quarterly returns. Income and capital returns may not equal total returns due to compounding effects of linking quarterly returns.*
- *The annualized internal rate of return (IRR) is calculated using monthly cash flows. The terminal value utilized in this calculation is equal to the net asset value as of the reporting date. Before fee cash flows are derived by adding accrued investment management fees and cash basis incentive fees to after fee cash flows*

In some cases, a fund may commence operations and incur income and/or expense prior to the initial cash contribution from the investor(s). For example: A commingled fund which utilizes a subscription line of credit to fund operations and purchase properties prior to the first capital call. When this occurs, a disclosure is needed to explain how the activity related to the period before the initial capitalization is treated in the return calculation. Two examples follow.

- *The closing date of the fund was December 15, 2008. The first capital call occurred on May 4, 2009. For performance return purposes, income and expense incurred from the date of closing through May 3, 2009 has been allocated to the numerator of the June 30 return calculation.*
- *The closing date of the fund was December 15, 2008. The first capital call occurred on May 4, 2009. For performance return purposes, income and*

expense incurred from the date of closing through May 3, 2009 has been allocated to the denominator of the June 30 return calculation.

7.08 Fund Level Valuation Policy [EXAMPLE]

7.08 (a) If presenting performance on a stand-alone basis (not in conjunction with financial statements) a valuation policy disclosure should be disclosed. Otherwise, reference can be made to the accompanying financial statement footnotes.

- *Assets are valued quarterly by the Company and appraised no less frequently than annually by an independent member of the Appraisal Institute.*
- *Both the internal and external property valuations rely primarily on the application of market discount rates to future projections of unleveraged cash flows and capitalized terminal values over the expected holding period of each property.*
- *Property mortgages, notes, and loans are marked to market using prevailing interest rates for comparable property loans if the terms of existing loans preclude the immediate repayment of such loans. Loan repayment fees, if any, are considered in the projected year of sale.*
- *Cash equivalents are stated at fair value, which is equivalent to cost. All other assets and liabilities are stated at cost, which approximates fair value, since these are the amounts at which they are expected to be realized or liquidated.*

7.09 Fund Level Benchmark Disclosure [EXAMPLE]

- *The benchmark for this group is the National Council of Real Estate Investment Fiduciaries (“NCREIF”) Fund Index Open-Ended Diversified Core Equity (“NFI-ODCE”).*
- *The NFI-ODCE benchmark has been taken from published sources.*
- *The NFI-ODCE is a pre and post-fee index of open-ended funds with lower risk investment strategies, utilizing low leverage and equity ownership of stable U.S. operating properties. The index is capitalization-weighted, based on each fund’s net invested capital.*
- *The NFI-ODCE data, once aggregated, may not be comparable to the performance of the fund presented herein due to current and historical differences in portfolio composition by asset size, geographic location, property type and degree of leverage.*

8. Performance Measurement Information Elements¹

8.01 (a) Information providers should maintain the following information:

Property Level Information

Net Operating Income	Net Cash Flow
Debt Service (Interest)	New Loan Proceeds
Debt Service (Principal)	Income Return (gross of fees) - quarterly
Additional Loan Principal Pay-downs	Appreciation Return - quarterly
Capital Improvements	Total Return (gross of fees) - quarterly
Net Sales Proceeds (Partial Sales)	Internal Rate of Return Since Inception
Gross Market Value at Beginning And End of Period	Average Annual Income, Appreciation and Total Returns (gross of fees) for:
Equity Value at Beginning and End of Period	Since inception Last 3-year period Last 5-year period
Outstanding Debt Balance	5-year-period increments (10, 15, 20...)
Estimate of Current Cost to Sell Property	

¹ The list above is intended to identify information elements that should reasonably be collected and retained by information providers. It is not intended to suggest the level or frequency of distribution of this information, or to define all information that is necessary to manage the investments or comply with all regulatory requirements.

Investment And Fund Level Information

Net Investment Income

Quarterly:

Income Return (gross of fees)

Beginning Market Value

Income Return (net of fees)

Appreciation Return

Ending Market Value

Total Return (gross of fees)

Total Return (net of fees)

Amounts and Dates of

Capital Contributions

Internal Rate of Return Since Inception

Capital Distributions and
Redemptions

Cash Distributions resulting from
financing & investing activities

Distributed and Retained Income Returns

Average Annual Income, Appreciation and Total

Investment Management Fees Expensed

Returns (gross and net of fees) for:

in Net Investment Income

Since inception

Last 3-year period

Estimate of Current Cost to Sell Investments

Last 5-year period

5-year-period increments (10, 15, 20...)

Weighted Average Equity

Capital Appreciation

Paid in Capital

Total Distributions

Total Commitments

Net Investment Income

Beginning Market Value

Ending Market Value

Amounts and Dates of

Capital Contributions

Capital Distributions and
Redemptions

Cash Distributions resulting from
financing & investing activities

Investment Management Fees Expensed

in Net Investment Income

Estimate of Current Cost to Sell Investments

Weighted Average Equity

Capital Appreciation

Paid in Capital

Total Distributions

Total Commitments

Quarterly:

Income Return (gross of fees)

Income Return (net of fees)

Appreciation Return

Total Return (gross of fees)

Total Return (net of fees)

Internal Rate of Return Since Inception

Distributed and Retained Income Returns

Average Annual Income, Appreciation and
Total

Returns (gross and net of fees) for:

Since inception

Last 3-year period

Last 5-year period

5-year-period increments (10, 15, 20...)

9. Additional Appendices

9.01 Appendix A – Sample Fund Level Presentation for Client Reporting

9.02 Appendix B – Sample Property Level Presentation for Client Reporting

XYZ FUND, L.P.

Historical Performance, 2004-2008

Dollar Amounts in Thousands

Year	Year End		Wtd. Avg. Interest Rate	Before Fee Returns			NFI-ODCE Index Benchmark	After Fee Returns			Multiples			
	Net Assets	Percent Leveraged		Investment Income (Loss)	Appreciation (Depreciation)	Total Gross Returns		Investment Income (Loss)	Appreciation (Depreciation)	Total Net Returns	Investment Multiple (TVPI)	Realization Multiple (DPI)	PIC	RVPI
2004	\$ 125,213	56 %	4.58 %	6.15 %	3.00 %	9.15 %	13.06 %	5.15 %	3.00 %	8.15 %	1.03	-	0.24	1.03
2005	449,809	37	5.65	6.07	7.00	13.07	21.39	5.07	7.00	12.07	1.24	-	0.73	1.24
2006	562,550	28	6.12	6.45	8.00	14.45	16.32	5.45	8.00	13.45	1.44	0.19	0.90	1.25
2007	532,547	19	6.24	6.19	8.00	14.19	15.97	5.19	8.00	13.19	1.68	0.61	1.00	1.07
2008	265,460	16	1.90	5.45	(9.00)	(3.55)	(10.01)	4.45	(9.00)	(4.55)	1.44	0.91	1.00	0.53
Annualized Time Weighted Returns Since Inception (January 1, 2004)				6.05	3.19	9.24	10.75	5.06	3.19	8.24				
Annualized Internal Rate of Return Since Inception (January 1, 2004)				9.45 %			8.45 %							
TVPI = Total Value to Paid-In Capital														
DPI = Distributed Capital to Paid-In Capital														
PIC = Paid-In Capital to Committed Capital														
RVPI = Residual Value to Paid-In Capital														

Notes:

- Performance results are denominated in U.S. dollars.
- Returns presented are net of leverage.
- Performance results include cash and cash equivalents and related interest income.
- Net returns are after investment management fees and performance incentive fees. Annual investment management fees are 1% of invested capital. No incentive fees have been earned.
- The income return is based on accrual recognition of earned income.
- Net cash flow is normally distributed monthly.
- Capital expenditures, tenant improvements and lease commissions are capitalized and included in the cost of the property; are not amortized; and are reconciled through the valuation process and reflected in the capital return component.
- Performance results are calculated on an asset-weighted average basis using beginning of period values, adjusted for time-weighted external cash flows.
- Annual returns are time-weighted rates of return calculated by linking quarterly returns. Income and capital returns may not equal total returns due to compounding effects of linking quarterly returns.
- The annualized internal rate of return ("IRR") is calculated using monthly cash flows. The terminal value utilized in this calculation is equal to the net asset value as of December 31, 2008.
- Assets are valued quarterly by the General Partner and appraised annually by an independent member of the Appraisal Institute.
- Additional information, including the Fund's valuation policy, capitalization policy regarding capital expenditures, tenant improvements, lease commissions and information related to investment management and incentive fees is presented in the notes accompanying the financial statements.
- The National Council of Real Estate Investment Fiduciaries ("NCREIF") Fund Index Open-Ended Diversified Core Equity ("NFI-ODCE") has been taken from published sources. The NFI-ODCE is a before-fee index of open-ended funds with lower risk investment strategies, utilizing low leverage and equity ownership of stable U.S. operating properties. The Index is capitalization-weighted, based on each fund's net invested capital.
- The NFI-ODCE data, once aggregated, may not be comparable to the performance of the XYZ Fund due to current and historical differences in portfolio composition by asset size, geographic location property type and degree of leverage.

ABC SEPARATE ACCOUNT UNLEVERED PROPERTY PERFORMANCE RETURNS

Periods Ended June 30, 2009

	ABC Account Before Fee Returns			NCREIF Property Index		
	Operating Income %	Appreciation (Depreciation) %	Total Returns %	Operating Income %	Appreciation (Depreciation) %	Total Returns %
2009						
First Quarter	1.62	(2.56)	(.94)	1.37	(8.70)	(7.33)
Second Quarter	1.74	(3.28)	(1.54)	1.50	(5.20)	(6.70)
Rolling						
One Year	6.19	(19.60)	(14.35)	5.49	(24.04)	(19.56)
Three Year	5.42	(3.80)	1.48	5.56	(4.39)	.99
Five Year	5.60	3.01	8.75	6.05	1.50	7.61
Ten Year	7.54	1.65	9.30	7.18	1.26	8.50
Annualized Time-Weighted Return Since Inception (9/9/94)	8.29	1.86	10.28	7.75	1.60	9.44
Annualized Internal Rate of Return Since Inception			9.15			n/a

Notes:

- Performance results are before the effect of leverage and calculated using the National Council of Real Estate Fiduciaries ("NCREIF") Property-Level
- Performance results are before deduction of advisor asset management and performance incentive fees and after deduction of advisor acquisition fees
- Net cash flow is assumed to be distributed quarterly.
- Performance results do not include cash and cash equivalents, related interest income and other non-property related income and expenses.
- The inputs to the performance return calculation are calculated in accordance with the Real Estate Information Standards ("REIS"). The operating income and the return is based on accrual recognition of earned income. Capitalized expenditures, tenant improvements and lease commissions are capitalized; depreciation is based on the cost of the property; are not amortized; and are reconciled through the valuation process and reflected in the appreciation/(depreciation) component of total returns.
- Annualized performance returns are time-weighted, calculated by geometrically linking quarterly returns. Income and appreciation/(depreciation) returns are equal total returns due to compounding effects of linking the quarterly returns.
- The annualized internal rate of return ("IRR") is calculated assuming that net cash flow is distributed quarterly. For purposes of this calculation, net cash flow is calculated as operating income minus capitalized costs. The terminal value utilized in this calculation is equal to the fair value of the properties as of June 30, 2009.
- Additional information, including the ABC Account's valuation policy, is presented in the notes accompanying the financial statements.
- The benchmark is the NCREIF Property Index ("NPI"), which has been taken from published sources. The NPI is an unleveraged, before fee index of operating real estate property types, excludes cash and other non-property related assets and liabilities, income and expenses. The methodology for the NPI is consistent with the time-weighted calculation methodology for all properties presented herein.
- The NPI data, once aggregated, may not be comparable to the performance of the ABC Account due to current and historical differences in portfolio composition by asset size, geographic location and property type.

Attachment B: Task Force Participants

The REIS Board and Council would like to thank the following individuals who participated in this project.

Name	Title/Firm	Professional Expertise
Bill Swiderski	<i>Associate Director, LaSalle Investment Management</i>	Performance Measurement

Subcommittee Members

Name	Firm	Professional Expertise
Stephanie Brower	<i>Manager, Russell Investments</i>	Performance Measurement (current NCREIF committee chair)
Jane Hufnagel	<i>Managing Director, CB Richard Ellis Investors</i>	Performance Measurement
Jan Johnson	<i>Associate Director, L&B Realty Advisors LLP</i>	Performance Measurement
Jamie Kingsley	<i>Director, Hawkeye Partners</i>	Performance Measurement (current NCREIF committee vice-chair)
Ingrid Lindblade	<i>Vice President, Heitman</i>	Performance Measurement
David MacDonald	<i>Vice President, State Street Corporation</i>	Performance Measurement (PREA Affinity Group)
Maritza Matlosz*	<i>Vice President, BlackRock</i>	Performance Measurement (past NCREIF committee chair)
Barbara McDowell*	<i>Director, ORG Portfolio Management</i>	Performance Measurement (PREA Membership Committee member)
Constance Wressell	<i>ORG Portfolio Management</i>	Performance Measurement

* Denotes REIS Council Member