



## **Verification Report – Ventas Inaugural Corporate Sustainability Report**

Goby, Inc. is in a contractual agreement with Ventas, Inc. to collect and compile the necessary data required to provide the GHG calculations and energy, water, and waste consumption that support the environmental data reported in Ventas's inaugural corporate sustainability report (CSR), published in October 2018 and covering environmental data for calendar years 2016-2017. The consumption data was collected from invoices and third party utility data providers for water, waste, electricity, natural gas and other major CO2 emitting fuels.

### **Responsibilities of Ventas and the Verification Provider**

The management of Ventas has primary responsibility for the preparation and content of its CSR. Goby's statement represents its independent opinion on the content and accuracy of the information and environmental data within.

### **Goby's Data Collection Process**

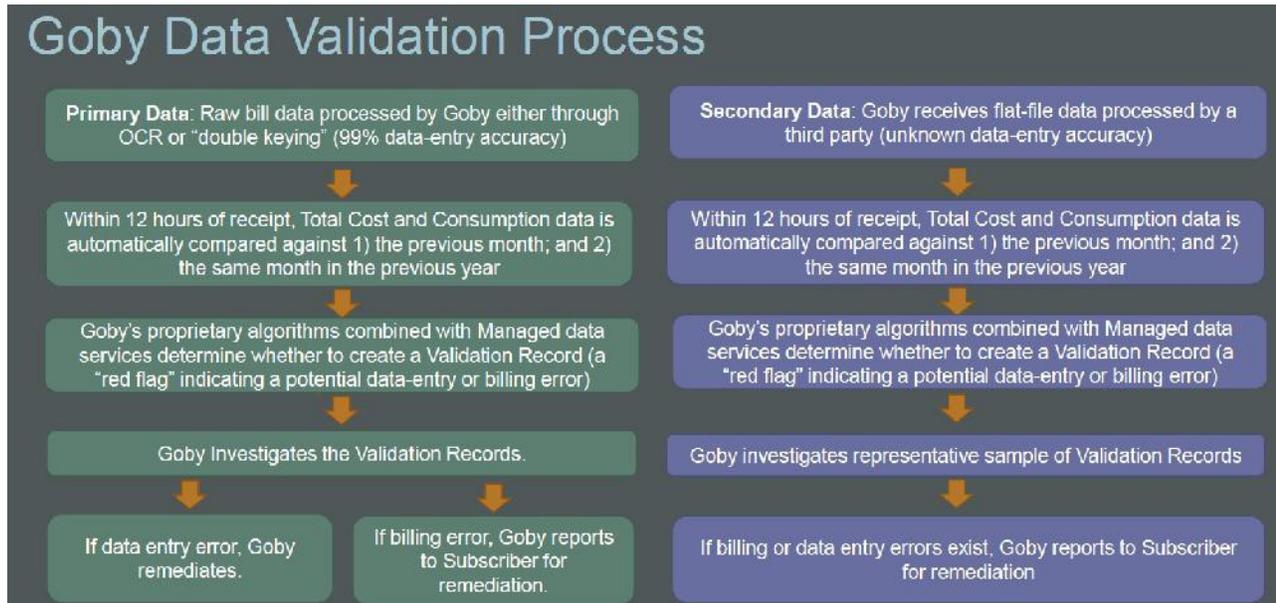
The following processes were utilized to collect and compile the data for the CSR covering calendar years 2016-2017:

- Consumption data was provided to Goby directly from third party energy suppliers and utility companies in the format of either an invoice, flat file, or other raw consumption data to be reviewed, analyzed, and validated into Goby's data management system. Each invoice was validated for accuracy by identifying any discrepancies and outliers prior to inputting in the Goby platform.
- After all data was inputted into the Goby platform, a missing data and data validation report was provided to Ventas for review to provide any additional data or clarifications. After all data was confirmed, the greenhouse gases were then calculated using The Climate Registry General Verification Version 2.1 (Released June 2014) standard.
- All relevant data is exported from the Goby platform to be broken down by each scope of GHG emissions, as applicable. The data was further verified by Goby teams to address any changes in property type and number of facilities.
- On a monthly basis, Goby will update utility data and property data as available for each building
- On a monthly basis, Goby will pull the monthly average temperature for weather normalization from NOAA based on local zip code
- Goby performs quality assurance tracking for reporting errors and large outliers in data
- Data and utility invoices will be pulled automatically into Goby via sites' online utility accounts, where available, and will manually load utility data from bills where online logins are not available
- Any invoices are stored in a cloud based file sharing program as a document repository



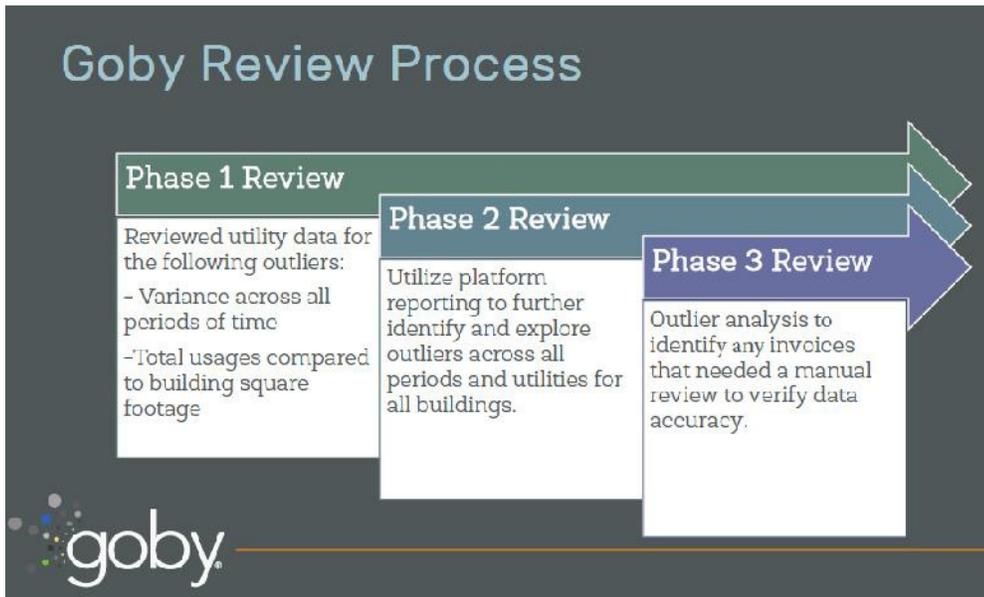
## Data Validation Process and Methodology

Below is a flow chart of the Goby Data Validation Process for how primary and secondary data are reviewed.



All utility data in the Goby platform is assessed based on the below validation rules. If any data is above or below the listed Error Type's then a flag is generated within the platform and a Goby Team member responds to that item. Data is reviewed based on various Interval periods to assess for potential errors.

Goby Platform Automated Validations			
Validation Rule	Error Type	Interval	Utility Type(s)
<ul style="list-style-type: none"> <li>Average Consumption per Day per Meter (if meter level data available)</li> <li>Average Consumption per Day per Building (if meter level data unavailable)</li> </ul>	Exceeds Threshold Percentage Change (+/-)	<ul style="list-style-type: none"> <li>Current Billing Period vs. Previous Billing Period</li> <li>Current Billing Period vs. Same Billing Period Last Year</li> </ul>	<ul style="list-style-type: none"> <li>Energy</li> <li>Water</li> <li>Waste</li> </ul>
Total Cost Per Bill	Exceeds Threshold Percentage Change (+/-)	<ul style="list-style-type: none"> <li>Current Billing Period vs. Previous Billing Period</li> <li>Current Billing Period vs. Same Billing Period Last Year</li> </ul>	<ul style="list-style-type: none"> <li>Energy</li> <li>Water</li> <li>Waste</li> </ul>
<ul style="list-style-type: none"> <li>Average Cost per Day per Meter (if meter level data available)</li> <li>Average Cost per Day per Building (if meter level data unavailable)</li> </ul>	Exceeds Threshold Percentage Change (+/-)	<ul style="list-style-type: none"> <li>Current Billing Period vs. Previous Billing Period</li> <li>Current Billing Period vs. Same Billing Period Last Year</li> </ul>	<ul style="list-style-type: none"> <li>Energy</li> <li>Water</li> <li>Waste</li> </ul>



### Stages of the Goby Platform



**HISTORICAL**  
 Historical Data Load  
 QA Spot Check

The Goby team will load historical utility data and monthly bills from either paper bills, utility logins, or other preferred systems in a **seamless data transfer**. This data will be saved in a central location and easily accessed from SeaSuite reports.



**CONFIG**  
 Data Configuration

SeaSuite **connects directly to utility providers** to pull data in automatically every month, removing burden and creating a painless setup process. Meter configurations will be unique to each property's specifications.



**LAUNCH**  
 Client Access

A **customized communication strategy** will be utilized to launch the platform as "live" to both executive level and property level teams. This strategy will onboard users with pragmatic training and support, including live webinars and in-person presentations.



**ONGOING**  
 Active

Our expert and **dedicated team** ensure ongoing support. This includes: ongoing meetings, data quality review, turn-key services, normalized and comparative reporting, utility bill management, etc.



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Goby has a high level of confidence with respect to the reported data. The consumption data was collected directly from the professional utility providers and input into our data management system. Once the data is extracted by the operators, Goby utilizes a separate process to automatically upload the data. Goby's validation process then begins by ensuring that the data that was provided by the operators and utility providers corresponds with what is in the Goby platform. The entry and validation process is both electronic and manual to insure greater accuracy. All data points are validated for outliers and discrepancies.

All GHG calculations are performed by Goby using the consumption data provided by the operators. Goby runs all the data through a manual recheck once exported from the platform to ensure there are no major outliers that could potentially misinterpret the data. Goby also uses the GHG Protocol to evaluate Ventas' specified environmental performance information and its adherence to the principles.

The loading of data and calculating of GHG emissions are overseen by Ashley Dauksas, Vice President of Data and Jason Franken, Director of Consulting.

## **ISO 14001 Alignment**

The Goby processes described here are aligned with the four stages of ISO 14001. See Appendix B for details.

## **Scope and Limitations**

The CSR covered a reporting period of January 1, 2016 – December 31, 2017. Greenhouse gas ("GHG") quantification is subject to inherent uncertainty due to such things as incomplete scientific knowledge and other factors, to precisely characterize the relationship between various inputs and the emission results. Energy use data used in GHG emissions calculations are subject to primary limitations, given the nature and the methods used for determining such data. The selection of different but acceptable measurement techniques may result in materially different measurements.

Based on our review, nothing came to our attention that caused us to believe that the selected sustainability metrics are not fairly stated.

Using the process outlined herein, Goby has assured Ventas' 2017 emissions and data points as specified in Appendix A. This represents 100% of the environmental data that Ventas has reported in the CSR.



## Appendix A

### ENVIRONMENTAL BOUNDARY PORTFOLIO CHARACTERISTICS - 2017

#### 102-46: Defining Report Content and Topic Boundaries

For the purposes of this report, Ventas's environmental boundary includes the following properties per our 4Q 2017 Supplemental Report <sup>1</sup>. The boundary excludes sold assets and Assets Intended for Disposition<sup>2</sup>.

Portfolio Characteristics	Number of Properties	Square Feet
MOB	232	14,155,355
Seniors Housing	288	25,220,565
Life Science	17	3,156,708
<b>Total</b>	<b>537</b>	<b>42,532,628</b>

### GRI 302: ENERGY

#### 302-1: Energy Consumption within the Organization

#### 302-3: Energy Intensity

Total Fuel Consumption (MWh/GJ)	2016	2017
Natural Gas <sup>3</sup> (MWh)	436,062	427,658
Natural Gas (GJ)	1,569,823	1,539,569

Total Energy Consumption (MWh) <sup>4</sup>	2016	2017
Electricity	890,854	885,608
Heating	436,062	427,658
Cooling	N/A	N/A
Steam	5,380	5,380
Renewables <sup>5</sup>	203	179
<b>Total</b>	<b>1,332,499</b>	<b>1,318,825</b>

<sup>1</sup> 2016 environmental data reflects the same portfolio as our 2017 boundary to show a like-for-like comparison. As such, assets owned in 2016 but not in 2017 are not reflected in the data. Nine assets were added to our environmental boundary in 2017, and data for these assets is reflected back to 2016.

<sup>2</sup> Assets Intended for Disposition: Properties that are included in discontinued operations, designated as held for sale, or for which there is an active intent to sell such properties.

<sup>3</sup> Natural Gas was the only source of fuel used and Scope 1 impact in 2016 and 2017.

<sup>4</sup> Includes fuel consumption (natural gas), which is used for heating.

<sup>5</sup> Ventas produced and consumed renewable energy on-site in 2016 and 2017. None of the energy generated was sold.



Energy Consumption and Intensity by Property Type (MWh/1,000sf)	2016		2017	
	MWh	MWh/1,000 sf	MWh	MWh/1,000 sf
MOB	519,795	36.7	469,028	33.1
Seniors Housing	630,411	25.0	667,504	26.5
Life Science <sup>6</sup>	182,293	57.7	182,293	57.7
<b>Total</b>	<b>1,332,499</b>	<b>31.3</b>	<b>1,318,825</b>	<b>31.0</b>

#### Standards, methodologies, assumptions, and/or calculation tools used:

Energy data is aggregated primarily from utility bills. Ventas engages a third-party consultant with expertise in utility data aggregation and environmental impact analysis; the process is aligned with ISO 14001.

Energy intensity is calculated by summing the total energy consumption from electricity, heating, cooling, and steam and dividing by the total square footage. For properties with less than 100% data coverage an estimate is used. The estimate is calculated as the MWh per square foot per month for all properties of like property type with 100% data coverage. The monthly intensity metrics per property type were applied to the corresponding square footage of the property to result in a total estimated MWh for 2016 and 2017. 18% of the energy data was estimated in 2017 and 16% of the energy data was estimated in 2016 based on total sq. ft of the portfolio ((Total Estimated Sq. Ft/Total Sq. Ft \*100) = Total % Estimated).

#### Source of the conversion factors used:

EPA Thermal Conversions: <https://portfoliomanager.energystar.gov/pdf/reference/Thermal%20Conversions.pdf>

## GRI 305: EMISSIONS

### Disclosure 305-1 Direct (Scope 1) GHG emissions

### Disclosure 305-2: Energy indirect (Scope 2) GHG emissions

2017

Property Type	Direct (Scope 1 MTCO <sub>2</sub> e)	Indirect (Scope 2, Location-based MTCO <sub>2</sub> e) <sup>7</sup>	Total (MTCO <sub>2</sub> e)	GHG Emissions Intensity (MTCO <sub>2</sub> e/1,000 sq ft)
MOB	20,702	168,896	189,598	13.4
Seniors Housing	49,161	141,258	190,419	7.6
Life Science	7,640	53,507	61,147	19.4
<b>Total</b>	<b>77,503</b>	<b>363,661</b>	<b>441,164</b>	<b>10.4</b>

<sup>6</sup> The life science assets were acquired in late 2016. 2017 life science energy data is used as an estimate for 2016 in order to show a like-for-like trend for the overall portfolio.

<sup>7</sup> Market-based Scope 2 emissions were not assessed for this reporting cycle.



## 2016

Property Type	Direct (Scope 1 MTCO <sub>2</sub> e)	Indirect (Scope 2, Location- based MTCO <sub>2</sub> e) <sup>7</sup>	Total (MTCO <sub>2</sub> e)	GHG Emissions Intensity (MTCO <sub>2</sub> e/ 1,000 sq ft)
MOB	23,770	185,064	208,834	14.8
Seniors Housing	47,616	133,607	181,223	7.2
Life Science	7,640	53,507	61,147	19.4
<b>Total</b>	<b>79,026</b>	<b>372,178</b>	<b>451,204</b>	<b>10.6</b>

Gases included in the calculation; whether CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, SF<sub>6</sub>, NF<sub>3</sub>, or all.

CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O

Source of the emission factors and the global warming potential (GWP) rates used, or a reference to the GWP source.

- Electricity (US) – EPA eGRID 2016 (2018)
- Electricity (Canada) – IEA 2017 (2018)
- Natural Gas/District Steam - EPA Emission Factors for Greenhouse Gas Inventories (2018)
- Global Warming Potential - IPCC Fifth Assessment Report, 2014 (AR5)

### Standards, methodologies, assumptions, and/or calculation tools used:

*Scope 1 Emissions:* Methodology aligns with the “The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)”; Using actual and estimated data, a total emission impact is calculated using EPA Emission Factors for Greenhouse Gas Inventories (2018). Ventas’s third-party consultant uses a calculation tool in their cloud-based platform to convert the energy usage to a Scope 1 greenhouse gas impact.

*Scope 2 Emissions:* Methodology aligns with the “The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)”; Using actual and estimated data, a total emission impact is calculated using EPA eGRID 2016 (United States) and IEA 2017 (International) emission factors to result in a total MTCO<sub>2</sub>e for Scope 2 Emissions from electricity. District Heating and Cooling conversion utilizes EPA Emission Factors for Greenhouse Gas Inventories (2018) to result in a total MTCO<sub>2</sub>e for Scope 2 District Heating and Cooling; Ventas’s third-party consultant uses a calculation tool in their cloud-based platform to convert the energy usage to a location-based greenhouse gas impact.

### 305-3: Other indirect (Scope 3) GHG emissions (MTCO<sub>2</sub>e)

Other Indirect (Scope 3) GHG Emissions Categories and Activities Included in the Calculation	2016	2017
Employee commuting	8	8
Business travel	411	332
Waste	25,546	23,281
Upstream leased assets	301	225
Downstream transportation and distribution	3,383	3,383
Downstream Leased Assets	51,501	60,492
<b>Gross Scope 3 GHG Emissions<sup>8</sup></b>	<b>81,150</b>	<b>87,721</b>

<sup>8</sup> Ventas has no Biogenic CO<sub>2</sub> emissions.



Gases included in the calculation; whether CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, SF<sub>6</sub>, NF<sub>3</sub>, or all.

CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O

Source of the emission factors and the global warming potential (GWP) rates used, or a reference to the GWP source.

- Electricity - EPA eGRID 2016, IEA 2017; District Heating and Cooling/Business travel/Employee Commuting - EPA Emission Factors for Greenhouse Gas Inventories (2018); Global Warming Potential - IPCC Fifth Assessment Report, 2014 (AR5)

Standards, methodologies, assumptions, and/or calculation tools used:

- Corporate Value Chain (Scope 3) Standard | (Supplement to the GHG Protocol Corporate Accounting and Reporting Standard)
- Upstream/Downstream Leased Assets: Chicago and Louisville Corporate offices (Upstream) and owned assets outside of environmental boundary (Downstream), using same calculation methodology of Scope 1 and 2 emission calculations. Downstream Asset emissions is for 269 properties outside the environmental boundary for which data is available; no estimations were applied where data was not available.
- Waste data represents the disposal of actual and estimated waste within the environmental boundary using the Waste Reduction Model (WARM), New Model Version 14 (<http://epa.gov/epawaste/conserve/tools/warm>).
- Business Travel - GHG Protocol Calculation Methodology
- Employee Commuting - Estimated based on 2017 FTE at Ventas (493)
- Downstream transportation and distribution – Estimated leased vehicle emissions from transport fuel from SHOP assets within the boundary. 2016 data was backfilled using 2017 data for a like-for-like, year-over-year Scope 3 comparison.

## GRI 303: WATER

### 303-1: Water Withdrawal by Source

Total Water Consumption (Gallons) <sup>9</sup>	2016	2017
MOB	396,420,407	390,682,702
Seniors Housing	1,194,852,796	1,155,462,775
Life Science	178,671,614	178,671,614
<b>Total</b>	<b>1,769,944,817</b>	<b>1,724,817,091</b>

Standards, methodologies, assumptions, and/or calculation tools used:

Water data is aggregated primarily from utility bills. Ventas engages a third-party consultant with expertise in utility data aggregation and environmental impact analysis; the process is aligned with ISO 14001.

For properties within the control boundary that have less than 100% data coverage an estimate is used. The estimate is calculated as the gallons per square foot per month for all properties of like property type with 100% data coverage. 22% of the water data was estimated in 2017 and 15% of the water data was estimated in 2016 based on total sq. ft of the portfolio ((Total Estimated Sq. Ft/Total Sq. Ft \*100) = Total % Estimated). Life Science assets purchased in late 2016 reported 2017 data in place for actual 2016 data to show to show a like-for-like, year-over-year comparison.

<sup>9</sup> 100% of the water withdrawn by Ventas comes from Municipal sources. We did not source water from surface water, ground water, rainwater or waste water.



## GRI 306: EFFLUENTS AND WASTE

### 306-2: Waste by type and disposal method

#### Total weight of waste

Total Weight of Waste (MT)	2016	2017
Total non-hazardous waste (all disposal methods)	83,522	77,636
Total hazardous waste	0	0

Total weight of non-hazardous waste, with a breakdown by the following disposal methods where applicable:

Total Waste by Disposal Method (MT)	2016	2017
Recycling	9,883	10,507
Compost	108	142
Landfill	73,531	66,987
Other	0	0
<b>Total</b>	<b>83,522</b>	<b>77,636</b>
<b>Diversion Rate</b>	<b>12%</b>	<b>14%</b>

#### Standards, methodologies, assumptions, and/or calculation tools used:

Waste data is aggregated primarily from waste hauler invoices. Ventas engages a third-party consultant with expertise in utility data aggregation and environmental impact analysis; the process is aligned with ISO 14001. In cases where volumetric data was provided instead of weight data, the following volume-weight conversion factors were used: [EPA Standard volume-to-weight conversion factors](#).

If actual waste tonnage or volume is available from the waste hauler invoice or other reliable source, that is reflected in our waste data. For most properties, waste amounts are estimated based on the number and size of waste containers that are picked-up by the waste hauler (based on the hauler invoice). For data collection and reporting purposes, it is assumed that containers are full, and contain an average weight per cubic yard. This is a standard practice today for estimating waste from commercial real estate properties.

Landfill waste data was estimated for about 180 assets, representing 38% of the waste data in 2017 and 2016 based on total sq. ft of the portfolio ((Total Estimated Sq. Ft/Total Sq. Ft) \*100) = Total % Estimated).



## Appendix B

### ISO 14001: Plan-Do-Check-Act Alignment

#### Plan:

- Incorporate the Plan-Do-Check-Act model in setting environmental objectives to comply with legal and environmental sustainability certification, such as ENERGY STAR, LEED and city-benchmarking requirements
- Configure the Entity's sustainability and CDP projects within the Goby Platform
- Configure CDP tasks and association with users
- Perform up to 2 training sessions for the Entity's on the Goby Platform to cover necessary feature, functions, and access.
- Provide program management and strategy for historical waste data collection and set up of ongoing tracking process
  - Goby will provide data entry services, where necessary.

#### Do:

- Provide consulting services on energy efficiency, sustainability, ENERGY STAR, CDP and LEED for the Entity's environmental goals
  - Goby will conduct periodical meetings to strategize on energy efficiency, water consumption and waste production

#### Check:

- Analyze the Entity's portfolio environmental impact in terms of energy consumption, water use and waste generation for ENERGY STAR and city-wide benchmarking and environmental sustainability certification requirements
- Establish and monitor programs to meet environmental objectives

#### Act:

- Evaluate performance against targets.
- Provide feedback and suggestions for improvement.
- Relay information and provide guidance for the Entity's employee environmental awareness and competence
- Review the Entity's CDP, Sustainability and Community Modules through the Goby Platform with continuous modifications and improvements following the Plan-Do-Check-Act mode.

**Please note the Goby EMS is aligned with the four stages of ISO 14001 EMS standards as indicated in the steps above.**