Introduction to SIMAP™

Training on the use of the new carbon and nitrogen calculator platform

www.unhsimap.org
1. Background and functionality
2. Data entry and customization
3. Results
4. Future plans

This webinar was presented on November 30, 2017
What is SIMAP?

- Developed in 2001 at UNH
- Excel and web version
- Used by thousands of institutions

- Developed in 2009 at UVA
- Excel-based
- Used by 20 institutions
- Completed pilot testing
How does SIMAP work?

Enter your inventory data:

**Scope 1**
- On campus stationary
- Direct transport
- Agricultural sources
- Other

**Scope 2**
- Electricity
- Steam
- Chilled water
- Other

**Scope 3**
- Commuting
- Food
- Wastewater
- Other

Carbon footprint

Nitrogen footprint
What is a nitrogen footprint?

Food is key sector for nitrogen

Energy sectors are key sector for carbon

The bar chart compares the nitrogen footprint and carbon footprint across various sectors:

- **Nitrogen footprint (metric tons N):**
  - Research
  - Transport
  - Utilities
  - Food consumption
  - Vegetables
  - Dairy, eggs, fish
  - Meat

- **Carbon footprint (1,000 MT CO₂e):**
  - Research
  - Transport
  - Utilities
  - Food consumption
  - Vegetables
  - Dairy, eggs, fish
  - Meat
Why a new tool?

• Capture a range of environmental impacts by adding nitrogen
• Use a single tracking tool
• Align with new GHG protocols
• Integrate with other reporting platforms
• Ensure UNHSI’s continued ability to provide the tool and support its user community
• Conduct and publish research about data trends
SIMPPLYING SUSTAINABILITY DECISIONS

SIMAP™ is a carbon and nitrogen-accounting platform that can track, analyze, and improve your campus-wide sustainability. Our proven algorithms, based on nearly two decades of work supporting campus inventories with the Campus Carbon Calculator, CarbonMAP and Nitrogen Footprint Tool, will help you:

• Create a baseline
• Benchmark your performance
• Create reports
• Set goals
• Analyze your progress year over year

GET STARTED!

YOUR CAMPUS FOOTPRINT

CARBON

CO2 emissions from generating power, treating waste, daily commuting, and even the use of paper, contribute to a campus’ carbon footprint. Reducing these greenhouse gas emissions will help slow the effects of climate change and global warming.

NITROGEN

Reactive nitrogen can result from everyday activities like food service, energy use, transportation, and ground fertilizer. Reducing your nitrogen footprint can provide benefits to air and water quality, while helping prevent climate change.
# Functionality

<table>
<thead>
<tr>
<th></th>
<th>Basic</th>
<th>Tier 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cost</strong></td>
<td>FREE!</td>
<td>$350 per year</td>
</tr>
<tr>
<td><strong>Data storage</strong></td>
<td>2 months</td>
<td>Long term</td>
</tr>
<tr>
<td><strong>Import/export</strong></td>
<td>N/A</td>
<td>Import/export</td>
</tr>
<tr>
<td><strong>Sectors</strong></td>
<td>Existing scopes 1-3</td>
<td>Existing scopes 1-3</td>
</tr>
<tr>
<td><strong>Support level</strong></td>
<td>Basic technical</td>
<td>Advanced</td>
</tr>
<tr>
<td><strong>Emission factors</strong></td>
<td>Basic</td>
<td>Customized</td>
</tr>
<tr>
<td><strong>Report template</strong></td>
<td>N/A</td>
<td>Two report formats</td>
</tr>
<tr>
<td><strong>Data review</strong></td>
<td>N/A</td>
<td>Data review by UNHSI</td>
</tr>
</tbody>
</table>
Account: Tier 1 upgrade

- Select 'My account' in top right and click 'Upgrade.'
- In shopping cart, select 'Continue Unregistered'
Account: Institution information

- Enter institution information
- Add and manage users
- Track general notes in 'Notebook'

- Enter normalization data

- Record sustainability programs
Data import – *Tier 1 only*

- CCC spreadsheet versions 6.7 to 9.1
- Food template
- CarbonMAP zip folder
For manual data entry, click on the enter data button.
### Data entry: Other sectors

<table>
<thead>
<tr>
<th>SCOPE 2</th>
<th>SCOPE 3</th>
<th>CALCULATION FACTORS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Utility Consumption</strong></td>
<td><strong>Commuting</strong></td>
<td><strong>Emission Factors</strong></td>
</tr>
<tr>
<td><strong>Renewable Energy</strong></td>
<td><strong>Business Travel &amp; Study Abroad</strong></td>
<td><strong>Utility Emission Factors</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Student Travel to/from Home</strong></td>
<td><strong>Food Conversion Factors</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Food</strong></td>
<td><strong>Global Warming Potential</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Paper</strong></td>
<td><strong>Unit Conversions</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Waste &amp; Wastewater</strong></td>
<td></td>
</tr>
</tbody>
</table>
Data entry: Scope 1 stationary (for on-site renewables)

If you generate renewables on your campus:
- Report any on-campus renewable generation in Scope 1 stationary
- Indicate whether you retain/own RECs for this installation in Scope 1 stationary

If there are RECs purchases or sales, where do you enter the purchase or sale of those RECs?

--- Scope 2
Data entry: Scope 2 utilities & renewables

REQUIRED for all users:
- Total electricity consumption from the grid (kwh)

REQUIRED if you have renewable purchases or sales:
- Enter renewable kwh (purchased or sold) in scope 2 data entry
- Note: This WILL BE duplicative data entry

This is a change from location-based to market-based accounting, according to updated GHG Protocols.
Data entry: Food

1. REQUIRED food data entry:
   - Date range
   - Label (descriptive text)
   - Food category 1
   - Weight
   - Unit (kg, lb)

2. OPTIONAL food data entry:
   - Vendor name
   - Organic
   - Local
   - Food category 2 & 3 (multi-ingredient)
   - Dollars
   - Confidence level
   - Notes

3. FOOD SCALING FACTORS

For more information:
   - User’s Guide (Resources tab)
   - Food Template (Resources tab)
# Data entry: Food Uploader

## Food Data Entry

*Required field in SIMAP

<table>
<thead>
<tr>
<th>Start Date</th>
<th>End Date</th>
<th>Label</th>
<th>Weight</th>
<th>Unit</th>
<th>Organic</th>
<th>Local</th>
<th>Category 1</th>
<th>Category 2</th>
<th>Category 3</th>
<th>Vendor</th>
</tr>
</thead>
</table>

## Import

Note: Years in the upload are treated as fiscal years based on the year 2007-01 to 2017-06-30.

### Upload File

- Choose File: No file chosen

#### Type *

- Campus Carbon Calculator v7.0 - 9.1
- Food Template
- CarbonMAP zip file

**UPLOAD**  **Cancel**
Data entry: Sinks and offsets

Add Offsets Data

- Origination *
  - On-campus
  - Off-campus

- Type *
  - Land-based (e.g., afforestation, reforestation)
  - Other (e.g., anaerobic digester, community energy project)

- Verification *
  - Third party verified
  - Peer-reviewed
  - Unverified

SINKS
- Compost
- Non-Additional Sequestration
- Offsets
How to view calculation factors

Food Conversion Factors

This table provides conversion factors used in the food calculations. The nitrogen content is based on the protein content of food (protein is 16% nitrogen). "Conventional" describes the food production nitrogen loss factors used for conventional food. "Organic" describes the food production nitrogen loss factors used for organic food. "Miles" describes the average number of miles that food type travels to be consumed. "Waste" is the average % of food waste by food category, and "Capacity" is used to calculate how many trips are necessary to deliver your food. These factors cannot be edited in the current version of SIMAP, but please let us know if you would like to modify any of them.

<table>
<thead>
<tr>
<th>Food Category</th>
<th>Nitrogen Content</th>
<th>Conventional virtual N factor (kg N loss / kg N food)</th>
<th>C footprint (kg eCO2 / kg food)</th>
<th>Food transport distance (miles)</th>
<th>Local food transport (miles)</th>
<th>Food waste</th>
<th>Truck capacity (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meat Chicken</td>
<td>0.02782</td>
<td>4.2</td>
<td>5.65</td>
<td>250</td>
<td>22700</td>
<td>0.15</td>
<td>22700</td>
</tr>
<tr>
<td>Meat Pork</td>
<td>0.02825</td>
<td>4.7</td>
<td>6.87</td>
<td>250</td>
<td>22700</td>
<td>0.15</td>
<td>22700</td>
</tr>
<tr>
<td>Meat Beef</td>
<td>0.02815</td>
<td>11.4</td>
<td>25.45</td>
<td>250</td>
<td>22700</td>
<td>0.15</td>
<td>22700</td>
</tr>
<tr>
<td>Dairy &amp; eggs: Milk</td>
<td>0.00633</td>
<td>0.3</td>
<td>1.34</td>
<td>65</td>
<td>22700</td>
<td>0.15</td>
<td>22700</td>
</tr>
<tr>
<td>Dairy &amp; eggs: Eggs</td>
<td>0.01655</td>
<td>3.2</td>
<td>3.54</td>
<td>65</td>
<td>22700</td>
<td>0.15</td>
<td>22700</td>
</tr>
<tr>
<td>Dairy &amp; eggs: Cheese</td>
<td>0.03010</td>
<td>0.3</td>
<td>9.78</td>
<td>65</td>
<td>22700</td>
<td>0.15</td>
<td>22700</td>
</tr>
<tr>
<td>Seafood: Fish</td>
<td>0.02871</td>
<td>2.5</td>
<td>3.63</td>
<td>250</td>
<td>22700</td>
<td>0.39</td>
<td>22700</td>
</tr>
</tbody>
</table>
Customization – **Tier 1 only**

- Use this section to customize the existing EFs or add custom chemicals or refrigerants.
- Customize fuel mixes under Scope 2 data entry.
Results: select parameters

3. Results

Footprints *
- Carbon
- Nitrogen

Report Type *
- Total footprint
- Scopes
- Categories
- Sources
- Gas/pollutant

Graph Type *
- Line
- Bar

Fiscal Year Range *
- 2007 - 2016

Normalization
- Optional

CALCULATE
The results will display a bar graph for each footprint and also a table with data below.

### Carbon

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>CH4 (kg)</th>
<th>CO2 (kg)</th>
<th>N2O (kg)</th>
<th>Gross MTCDE</th>
<th>Offsets (MTCDE)</th>
<th>Compost (MTCDE)</th>
<th>Non Additional Sequestration (MTCDE)</th>
<th>Biogenic (MTCDE)</th>
<th>Net MTCDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>54.695</td>
<td>62,877.807</td>
<td>1.594</td>
<td>64,809.53</td>
<td>-2,326.00</td>
<td>-53.34</td>
<td>0.00</td>
<td>122,184.45</td>
<td>62,428.19</td>
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<tr>
<td>2011</td>
<td>52.778</td>
<td>54,790.322</td>
<td>1.766</td>
<td>56,517.04</td>
<td>-2,326.00</td>
<td>-46.72</td>
<td>0.00</td>
<td>137,307.37</td>
<td>54,440.32</td>
</tr>
<tr>
<td>2012</td>
<td>60.112</td>
<td>50,708.026</td>
<td>1.685</td>
<td>52,712.68</td>
<td>-2,326.00</td>
<td>-44.00</td>
<td>0.00</td>
<td>112,932.59</td>
<td>50,340.49</td>
</tr>
</tbody>
</table>
Annual Report – *Tier 1 only*

The reports tab provides an overview for an entire year and you can export the tables – it is equivalent to the S_Annual tab in CCC.
This report tab provides an overview of the data for Second Nature reporting platform. You can display it or export to complete your signatories report.
Data export – Tier 1 only

- All inventory data
- Emissions factors
- Results
- Reports (on reports tab)
Resource pages have tools and information to assist with collecting inventory and explanations and supporting facts on how the calculations are made in SIMAP.
SIMAP timeline: Short term

1. **November:** Launch!
2. **December:** Transition data to SIMAP
   - We will post video tutorials to orient users on the SIMAP Resource page and on [https://sustainableunh.unh.edu/calculator](https://sustainableunh.unh.edu/calculator)
3. **January:** UNH discontinues support for CCC and CarbonMAP

*We are here to help!*
What is different from CCC and CarbonMAP?

**Updated Methodology**
- Scope 1: On-site renewable energy
- Scope 2: Purchased and sold renewable energy
- Scope 3: Student Travel to/from home data entry
- Biogenic allocation for incinerated waste
- Sinks and offsets
- Weighted campus users

**Emission Factors**
- On-campus stationary combustion and electricity custom fuel mix
- Air travel CO2

See 'Resources' tab in SIMAP for details and future updates.
Future plans

1. Tier 2:
   1. Projections and Solutions
   2. Complete scope 3
   3. Multi-campus accounts
   4. International emission factors

2. Add other sustainability indicators (e.g., water, phosphorus)
Questions, suggestions, concerns?

For updates and training schedule, check our website

https://sustainableunh.unh.edu/calculator

or

https://unhsimap.org/cmap/resources/tools

or email us at simap@unh.edu