ecoCity Footprint Tool Pilot

~ *Observing Cities Webinar*

Presented by:
Jennie Moore &
Cora Hallsworth

6 June 2017
11:00 am – 12:00 pm Pacific

Cora Hallsworth Consulting

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Welcome

PROJECT LEADS:
Jennie Moore, BCIT
Cora Hallsworth, CHC

PROJECT ADVISORS:
Allison Ashcroft, USDN
Babe O'Sullivan, USDN

PILOT CITIES:
Iowa City, IA
City of Victoria BC
City of North Vancouver BC
District of Saanich BC
City of Vancouver BC

FUNDING PARTNER:
USDN

OBSERVING CITIES:
Cincinnati OH
Cupertino CA
Edmonton AB
Emeryville CA
Flagstaff AZ
Gaithersburg MD
Kauai OH
Oakland CA
Philadelphia PA
Portland OR
Santa Monica CA
Squamish BC

STAKEHOLDERS:
Additional USDN members
Additional North American municipalities and regional districts
ICLEI
Federation of Canadian Municipalities
Province of BC

Objectives

- Provide orientation on the ecoCity Footprint Tool and Pilot Project
- Understand your interest in the Tool
- Gauge readiness for undertaking this form of carbon and ecological footprinting and consumption based inventories
- Obtain preliminary feedback on the Tool and pilot project

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Agenda

1. Welcome & Introduction
2. Background ~ ecoCity Footprint Tool and Pilot Project
3. ecoCity Footprint Tool Highlights
4. Group Discussion

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ecoCity Footprint Tool Background

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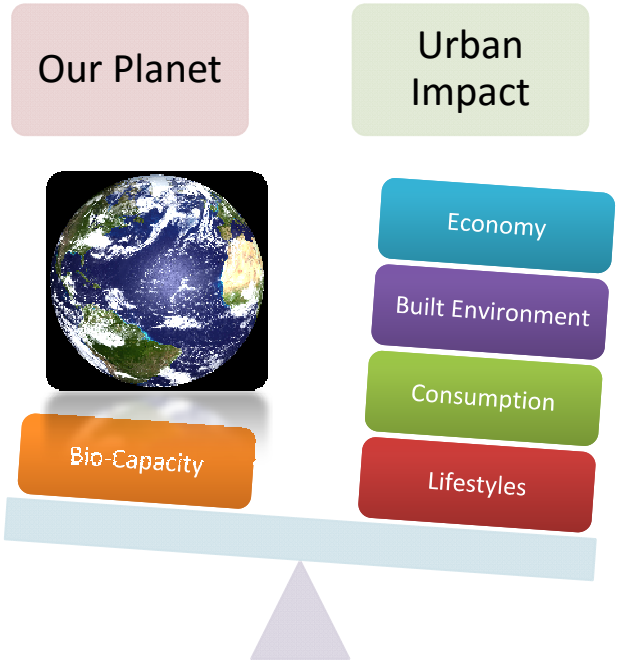
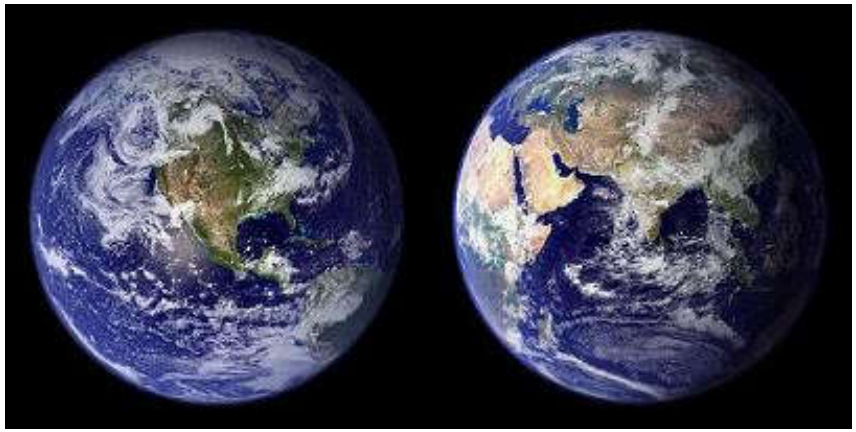
ecoCity Footprint Tool Background



- We are in a state of **ecological overshoot**
- Ecological Footprint analysis clarifies how **consumption** is contributing to overshoot
- The Tool was originally conceived for ecological footprint utility but it also provides a **consumption based emission inventory**

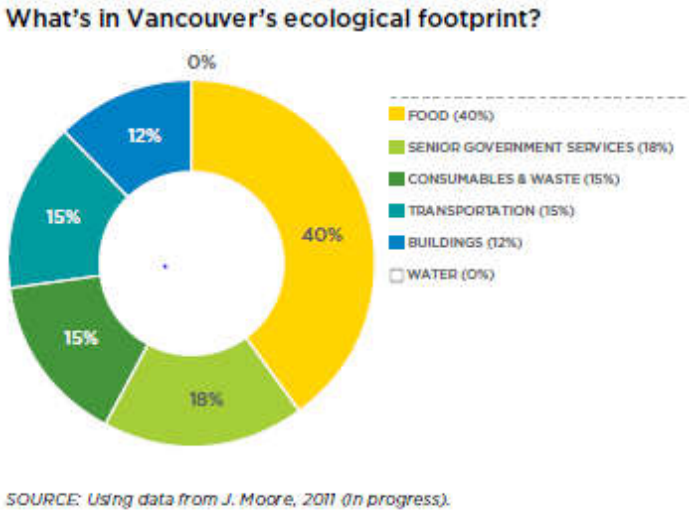
ecoCity Footprint Tool Background



- Created through Dr. Jennie Moore's PhD, under supervision of Dr. William Rees
- **Informs policy** aimed at reversing overshoot and mitigating climate change
- A **'bottom-up'** tool, using local data

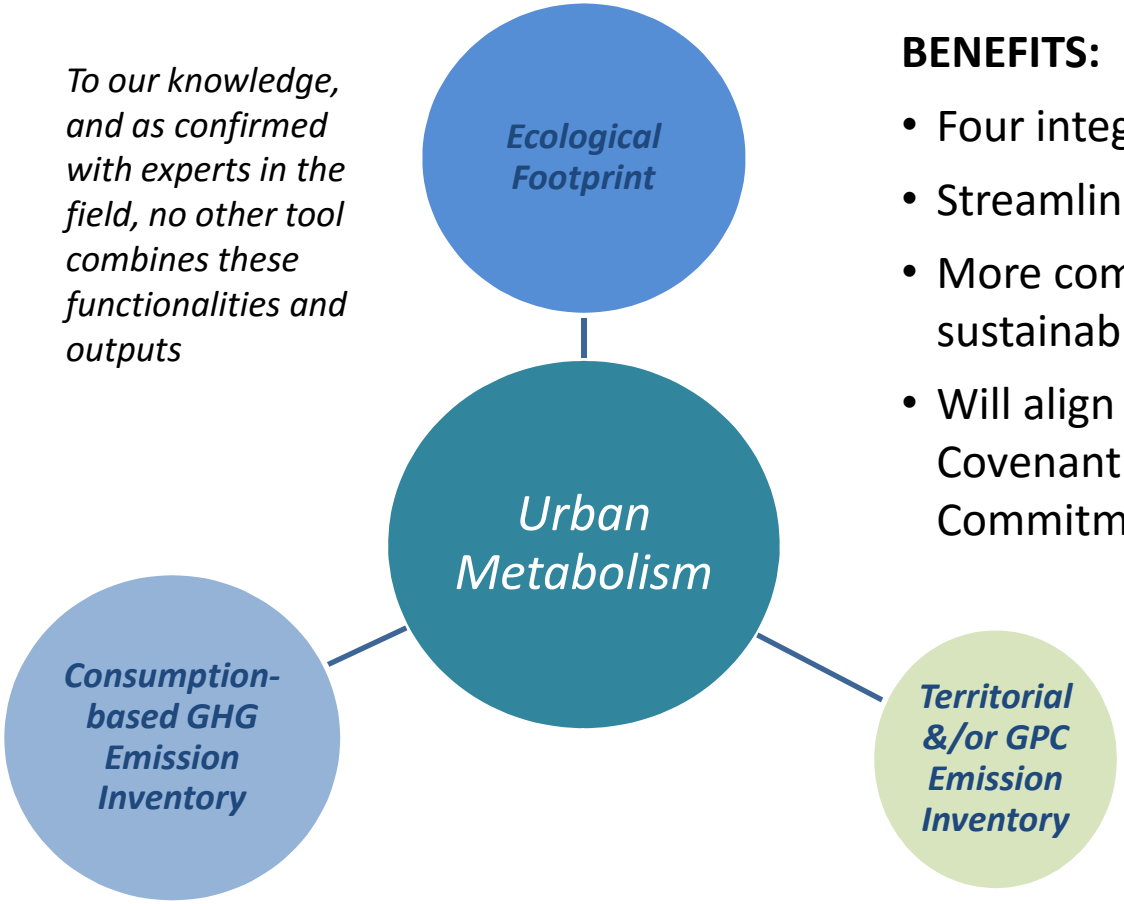
Application in Vancouver

Prototype ecoCity Footprint Tool created City of Vancouver's ecological footprint and consumption-based greenhouse gas (GHG) emissions inventory in 2006.



ecoCity Footprint Tool Outputs

To our knowledge, and as confirmed with experts in the field, no other tool combines these functionalities and outputs



BENEFITS:

- Four integrated outputs
- Streamline data collection
- More comprehensive sustainability indicators
- Will align with GPC to meet Covenant of Mayors Commitments

Sustainable Consumption ~ a USDN focus area

Tell the whole truth about lifestyle impacts

Link policy to footprint outcomes

Inspire people to act on what they can change

Leverage city initiatives through engaged citizenry

Questions?

Polls –

Ecological Footprint & Consumption Based Emission Inventories

Pilot Project Overview

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Pilot Project Objectives

1. Enhance, refine, and test the prototype ecoCity Footprint Tool
2. Scoping for an on-line format of the Tool
3. Create consumption based emission inventories and ecological footprints for the five pilot communities
4. Test in a US context

Pilot Cities

Current:

- Iowa City, IA (testing for US context)
- City of Victoria
- City of North Vancouver
- District of Saanich
- City of Vancouver

Previous:

- Medellin, Columbia
- Cusco, Peru

Work Plan

KEY DELIVERABLES	TIMING
Tool Enhancements: **- GPC compliance review** **- User guidance**	 Complete In Progress
Data collection	Mar-June
Scenario building	Summer
Scoping for On-line Tool	Fall 2017
Engage observing cities	Ongoing
Reporting	Ongoing

Desired Outcomes

Cities will have access to a tool that will:

- Provide a more robust understanding of emission sources and ecological impacts.
- Inform sustainable consumption efforts.
- Highlight new opportunities to reduce emissions and ecological impacts.
- Support reporting requirements (e.g., Covenant of Mayors, Partners for Climate Protection (in Canada))

Questions?

Poll

- Tool Outputs & Covenant of Mayors Commitments

Tool Highlights

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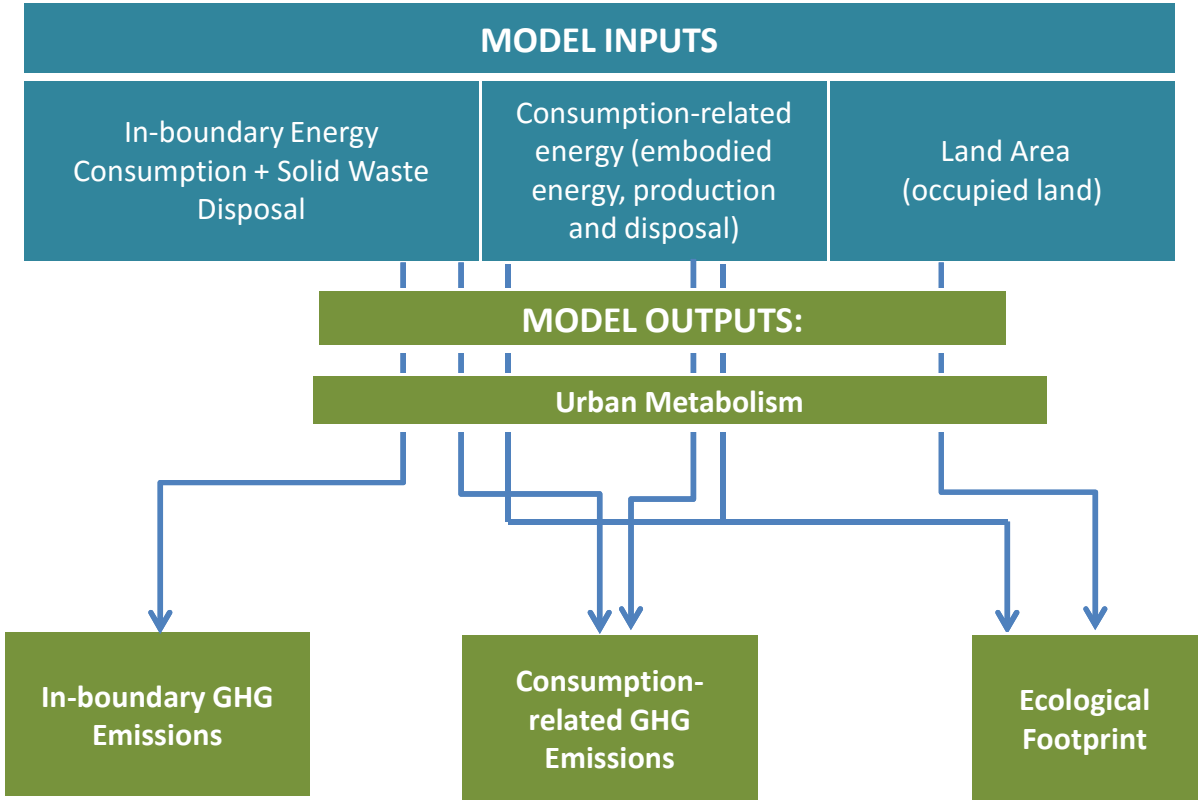
Data Inputs

Required to derive: Materials, embodied energy, operational energy and built area

Food	Consumption data and food miles
Buildings	Built area, material components and operational energy, by sector
Consumables and Wastes	Consumption data derived from solid waste outputs, by sector; built area, material components, and operational energy of infrastructure
Transportation	Built area and material components of infrastructure; operational energy (via VKT, by transport type and vehicle type)
Water	Built area, material components, and operational energy for drinking water, sewerage and drainage infrastructure

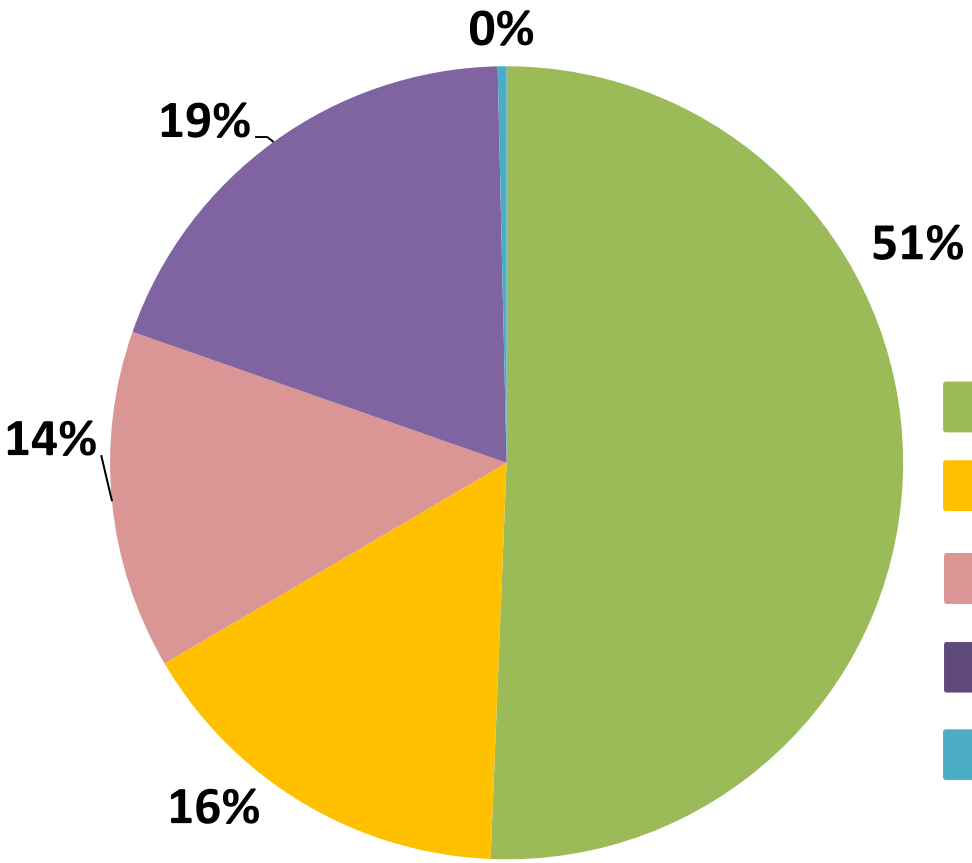
ecoCity Footprint Tool Design



Exploring Results

- The following slides demonstrate results from Vancouver's 2006 Assessment
- Results from 2015 assessment for our 5 pilot cities will be shared in the Fall

Vancouver's Ecological Footprint By ACTIVITY



Food	2.13 gha/ca
Buildings	0.67 gha/ca
Consumables & Waste	0.58 gha/ca
Transportation	0.81 gha/ca
Water	0.02 gha/ca
TOTAL	**4.21 gha/ca**

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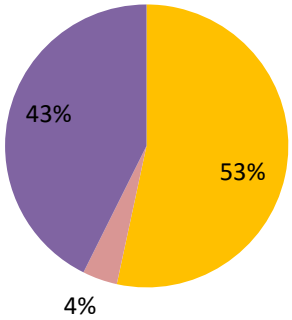
Comparing Outputs – Vancouver 2006

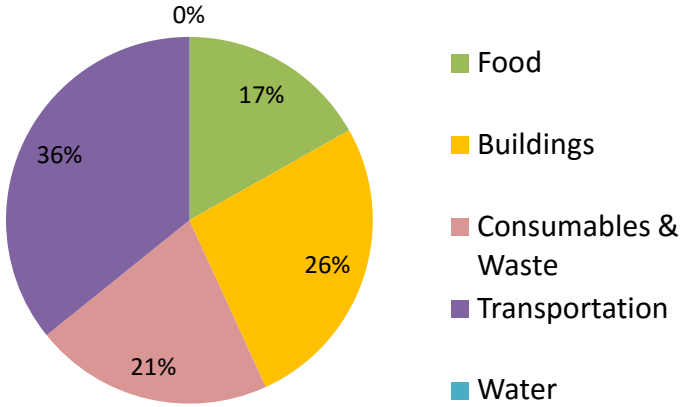
GHG Emission Inventory

(based on PCP protocol)



Total GHGs 2,847,507 tCO2e
Per capita 4.9 tCO2e

Consumption Based Emission Inventory



Total GHGs 5,530,605 tCO2e
Per Capita 9.2 tCO2e

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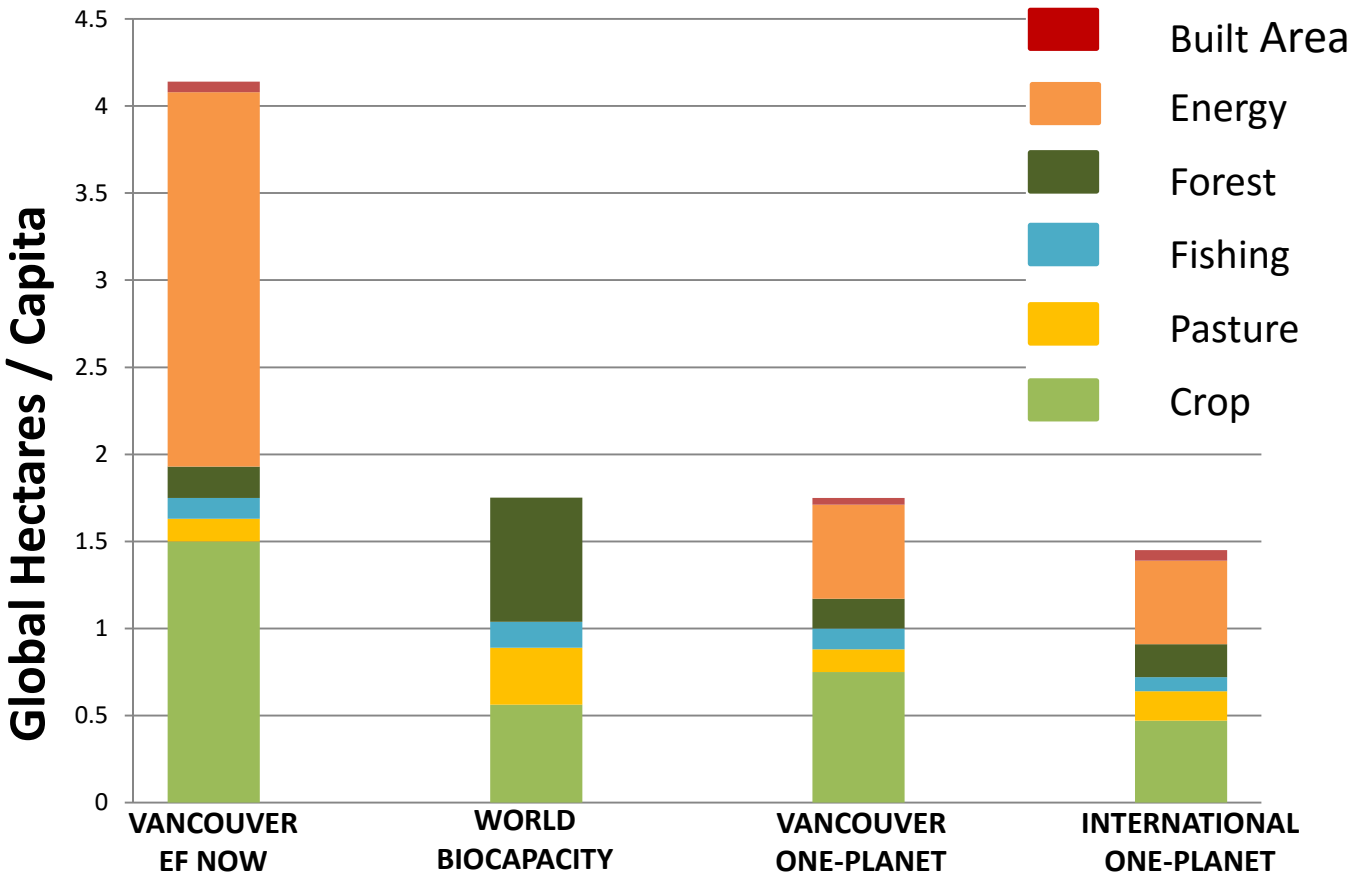
Exploring Reduction Potential - **Vancouver**



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Ecological Footprints Analysis Tool

Vancouver Consumables and Waste Footprint Data Summary

Jennie Moore © 2011

	Inputs		Output 1		Output 2	
Solid Waste Materials Disposed						
Residential	85,349	tonnes	30.643	%		
Multi-unit Residential	96,590	tonnes	34.679	%		
ICI	96,590	tonnes	34.679	%		
Total waste disposed	278,529		100	%		
Option 1: Wet Landfill						
Amount Disposed at Vancouver Landfill						
Residential	62,759	tonnes	23,974	tCO2e	11,987	tCO2
Multi-unit Residential	70,961	tonnes	27,107	tCO2e	13,553	tCO2
ICI	70,961	tonnes	27,107	tCO2e	13,553	tCO2
Demolition Land Clearing	75,004	tonnes				
Biogas Collected (2007)	41,488,424	m^3LFG				
Waste to Vancouver Landfill	208896.9461		78,188	tCO2e	39,094	tCO2
Option 2: Dry Landfill						
Amount Disposed at Cache Creek Landfill						
Residential	10,685	tonnes	2,746	tCO2e	1373	tCO2
Multi-unit Residential	12,122	tonnes	3,115	tCO2e	1558	tCO2
ICI	12,122	tonnes	3,115	tCO2e	1558	tCO2

World | Summary & Graphs | Food | Buildings | **Consumables & Waste** | Transportation | Water | LCA - Food | ...

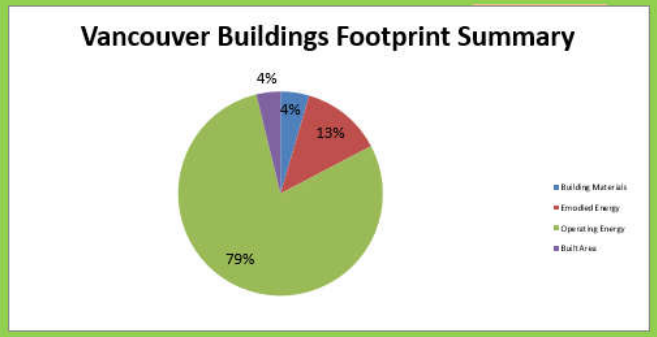
Ecological Footprints Analysis Tool

Vancouver Buildings Footprint Data Summary — *Jennie Moore © 2011*

	Input		Output1	Output2	Footprint	
Built Land Area						
Total City Area (hectares)	11,467	ha				
Total Built Area (hectares)						
Residential	5,317	ha			12,708	gha
Commercial	382	ha			913	gha
Institutional	533	ha			1,274	gha
Total Built Land Area	6,232	ha			**14,894**	gha
TOTAL GHGs			**1,446,202 tCO2e**			
TOTAL FOOTPRINT					**391,598**	**gha**

Jennie Moore © 2011

Buildings Footprint Summary		
Building Materials	17741	gha
Emodied Energy	50013	gha
Operating Energy	308645	gha
Built Area	14894	gha
Total	391293	



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World | Summary & Graphs | Food | **Buildings** | Consumables & Waste | Transportation | Water | LCA - Food | ...

Questions?

Poll

- Readiness & Barriers

Questions & Discussion

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Discussion

1. How could the information/ outputs generated by the ecoCity Footprint Tool align with and contribute to your efforts?
2. Please elaborate on any barriers that you would need to overcome to engage in a Consumption Based Emission Inventory &/or Ecological Footprint Tool project; and on opportunities to overcome these barriers?

THANK YOU!

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EXTRA SLIDES

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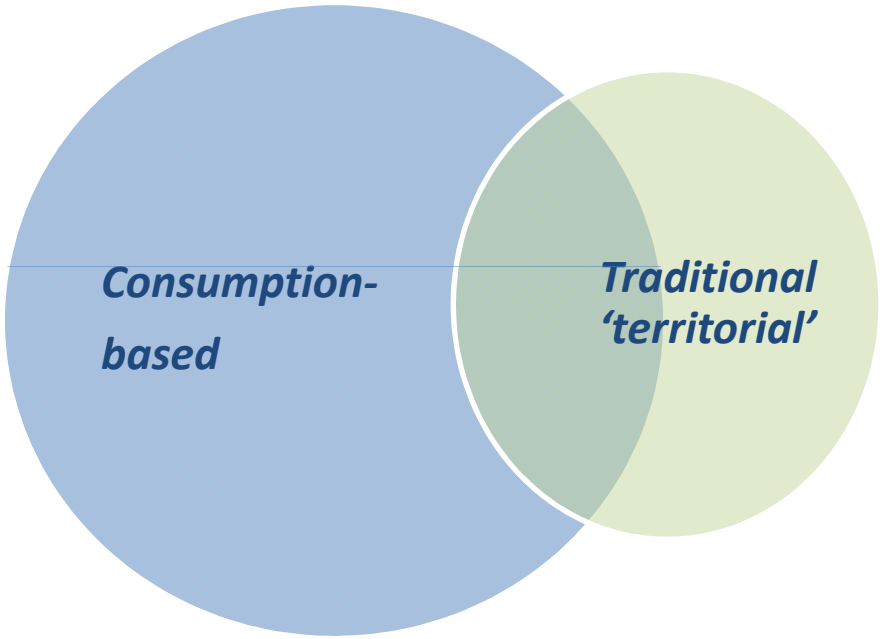
A new standard for community inventories – the Global Protocol for Community Scale Emissions (GPC)

- A new international reporting standard
- Standardized methodology for community reporting
- Expands data set typically collected by local government (e.g., to include industrial and agricultural sources and out of boundary transportation)
- We aim to align the ecoCity Footprint Tool with the GPC

Complimentary GHG Emission Inventory Approaches

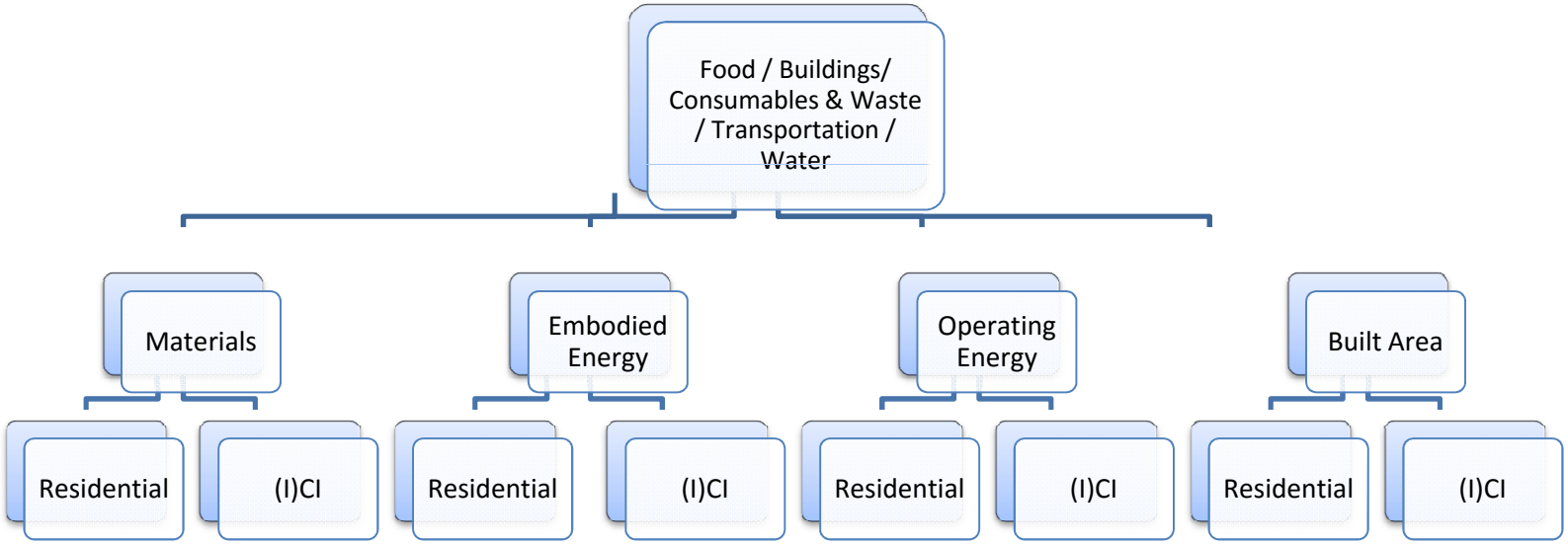
Evaluation of emissions associated with all consumption, regardless of where produced



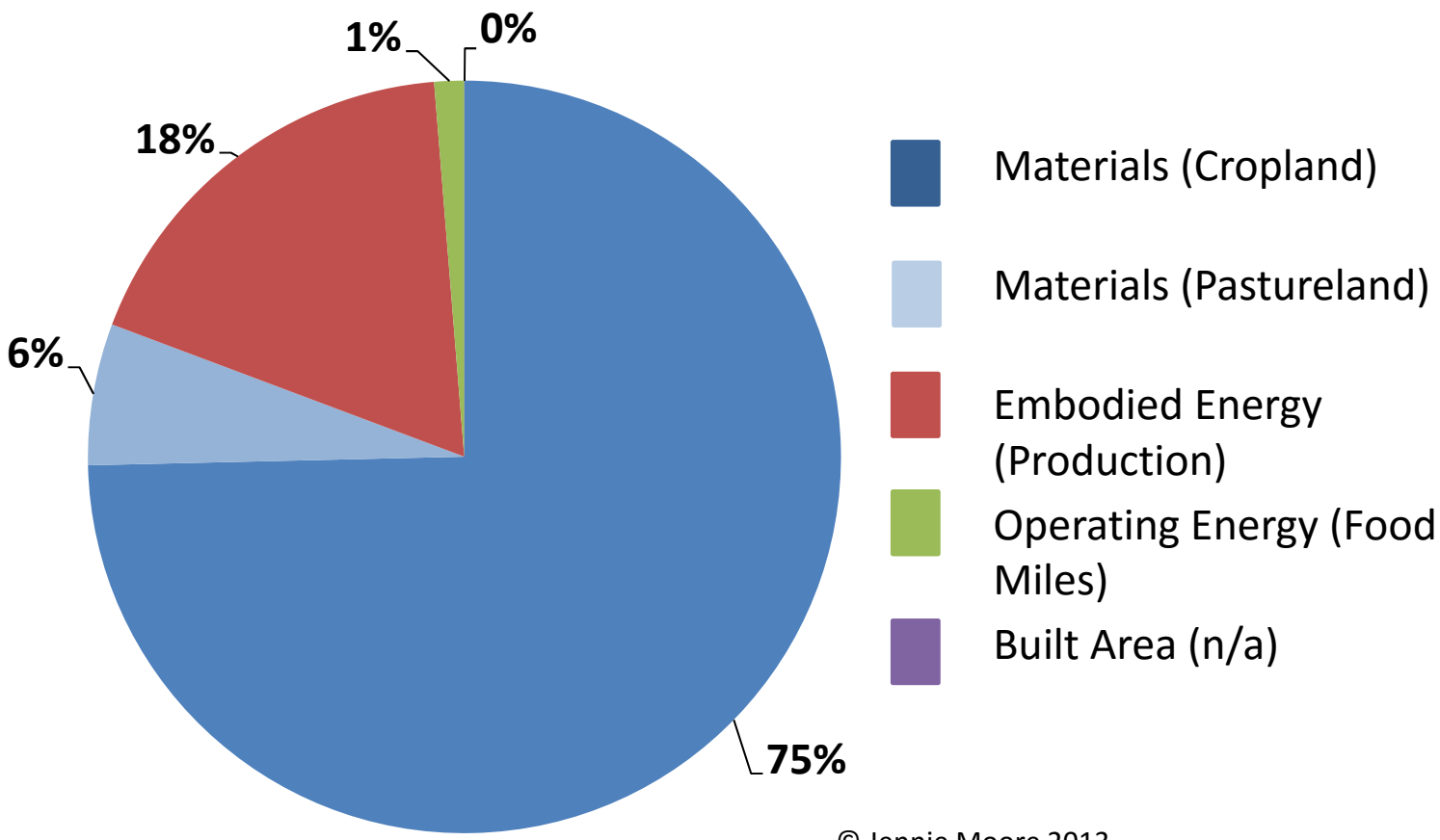
In-boundary emissions from:
Community-wide sources:
•Energy used for buildings, transportation, water supply/treatment
• Solid waste disposal

A growing number of local and regional governments are pursuing consumption based inventories to complement traditional inventories

Schematic of data inputs



Food Footprint (2.13 gha/ca)



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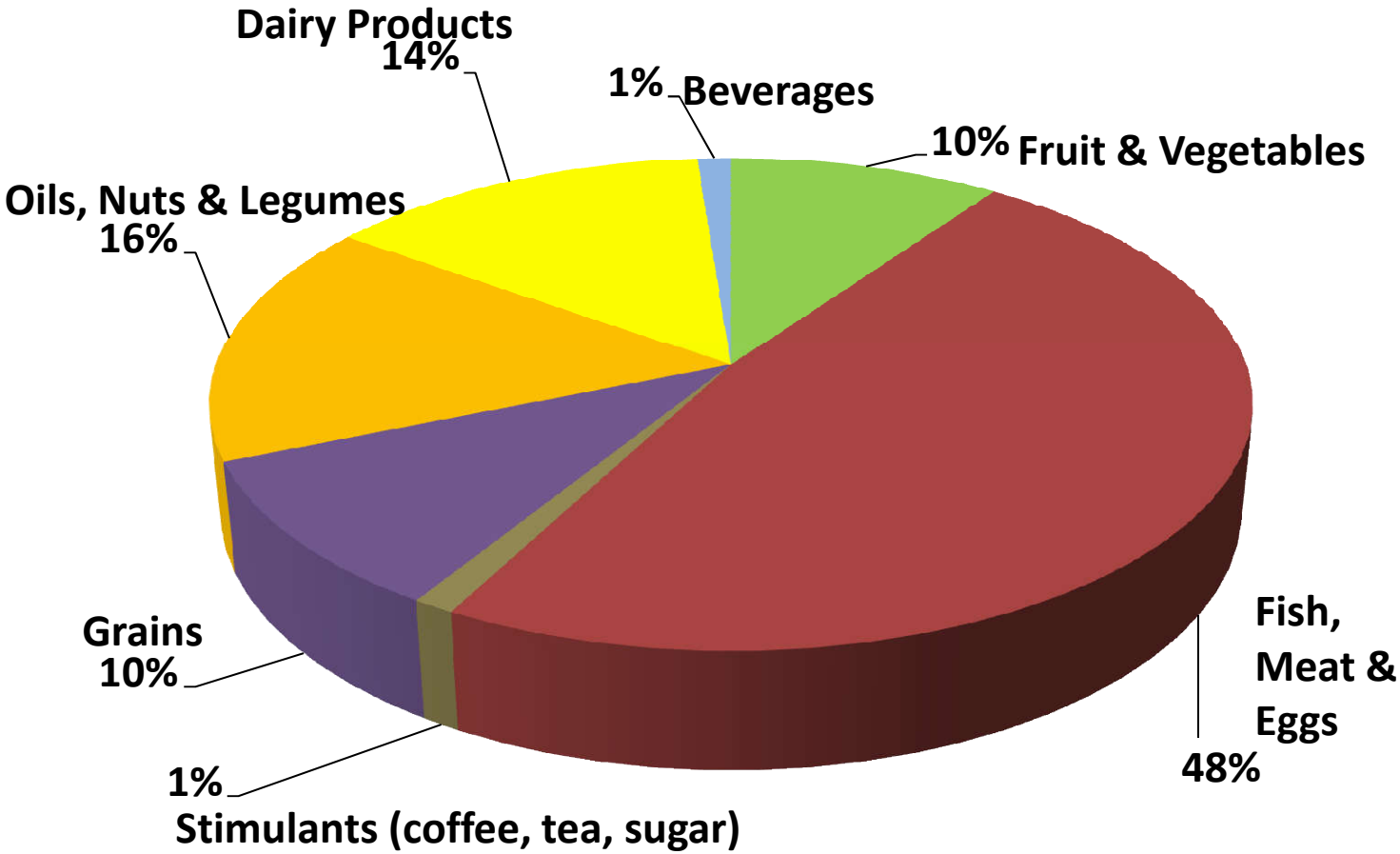
Food Footprint by TYPE (2.13 gha/ca)



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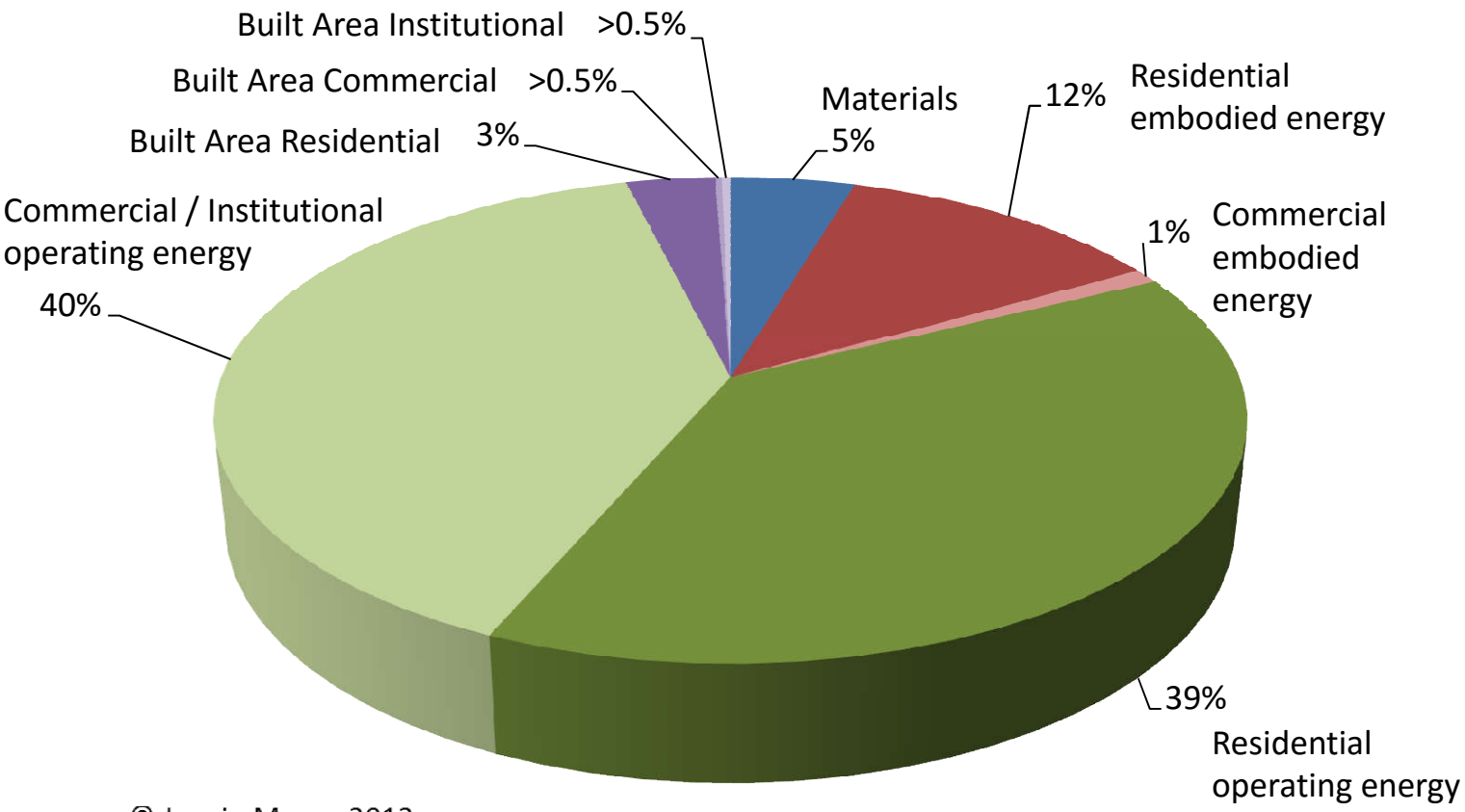
Buildings Footprint (0.67 gha/ca)



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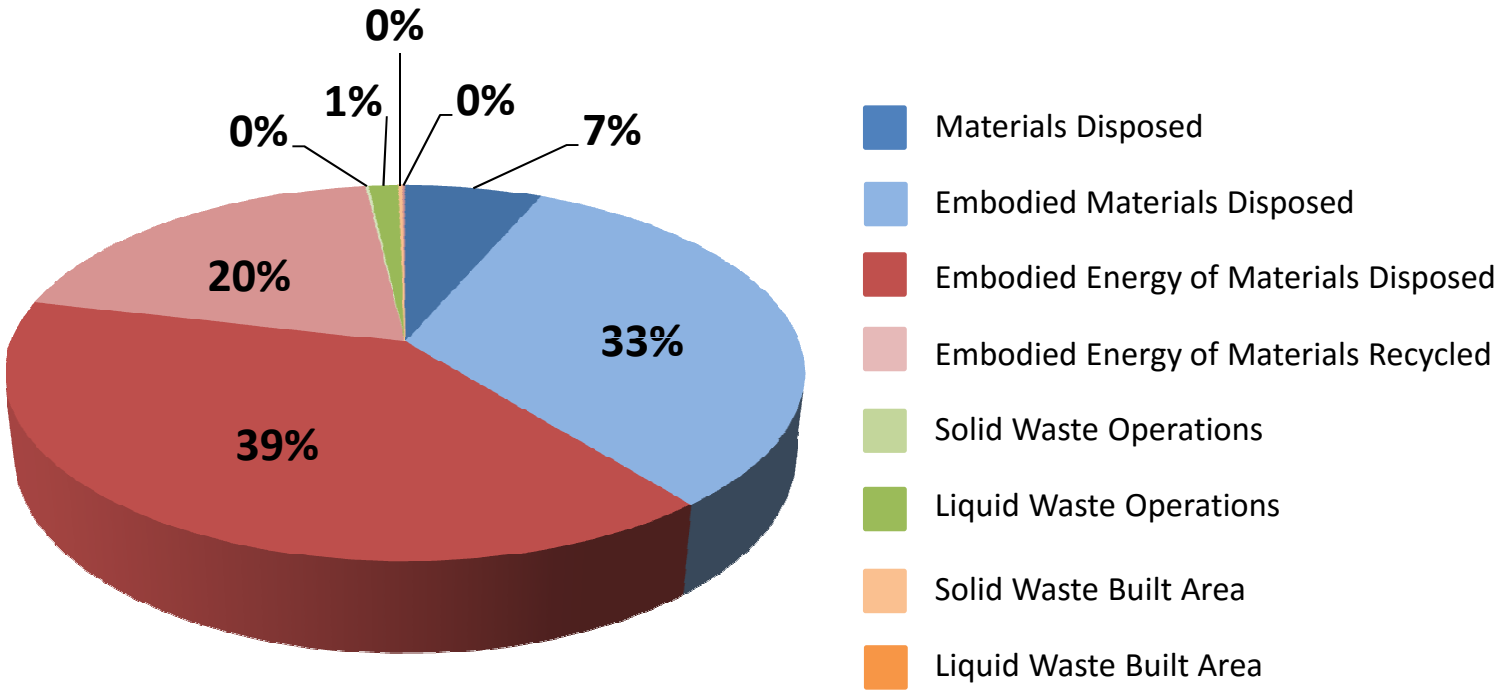
Consumables and Waste Footprint (0.58 gha/ca)



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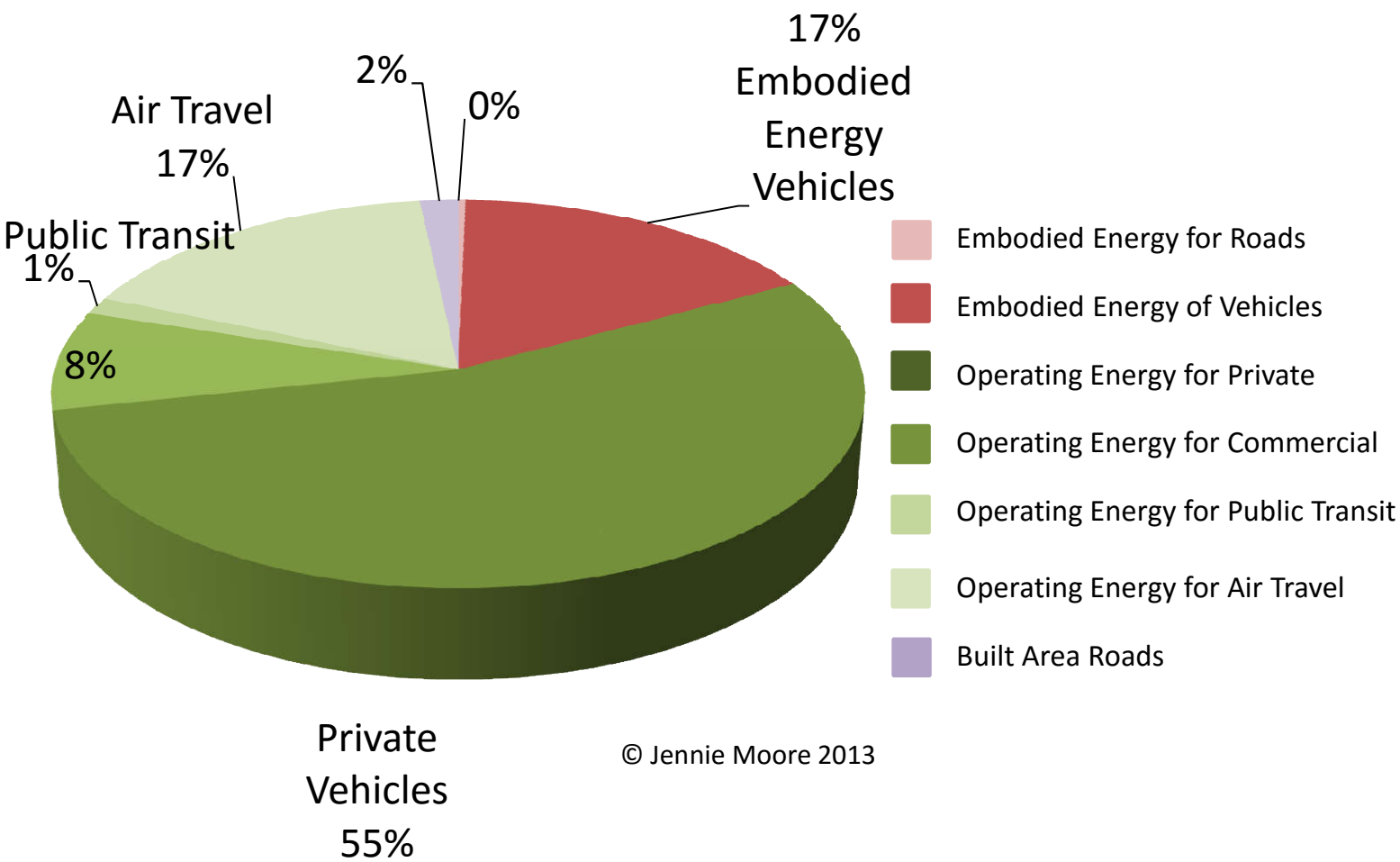
Transportation Footprint (0.81 gha/ca)



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One-Planet Baseline
Vancouver's Top five actions include:

1	Make 86% of trips by walking, cycling and transit	0.38 gha/ca
2	Reduce food waste post-purchase by 50%	0.37 gha/ca
3	Reduce red meat consumption 50% by substituting with white meat or legumes	0.34 gha/ca
4	Improve energy efficiency in buildings by 40%	0.21 gha/ca
5	Reduce paper consumption by 50%	0.12 gha/ca

* gha: global hectares/capita

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