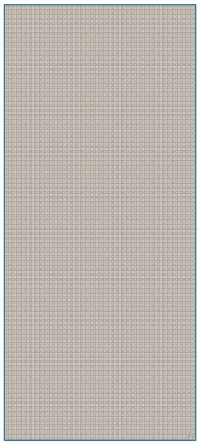
MATERIALS BOUNDARIES & SCOPING

7/24/2014



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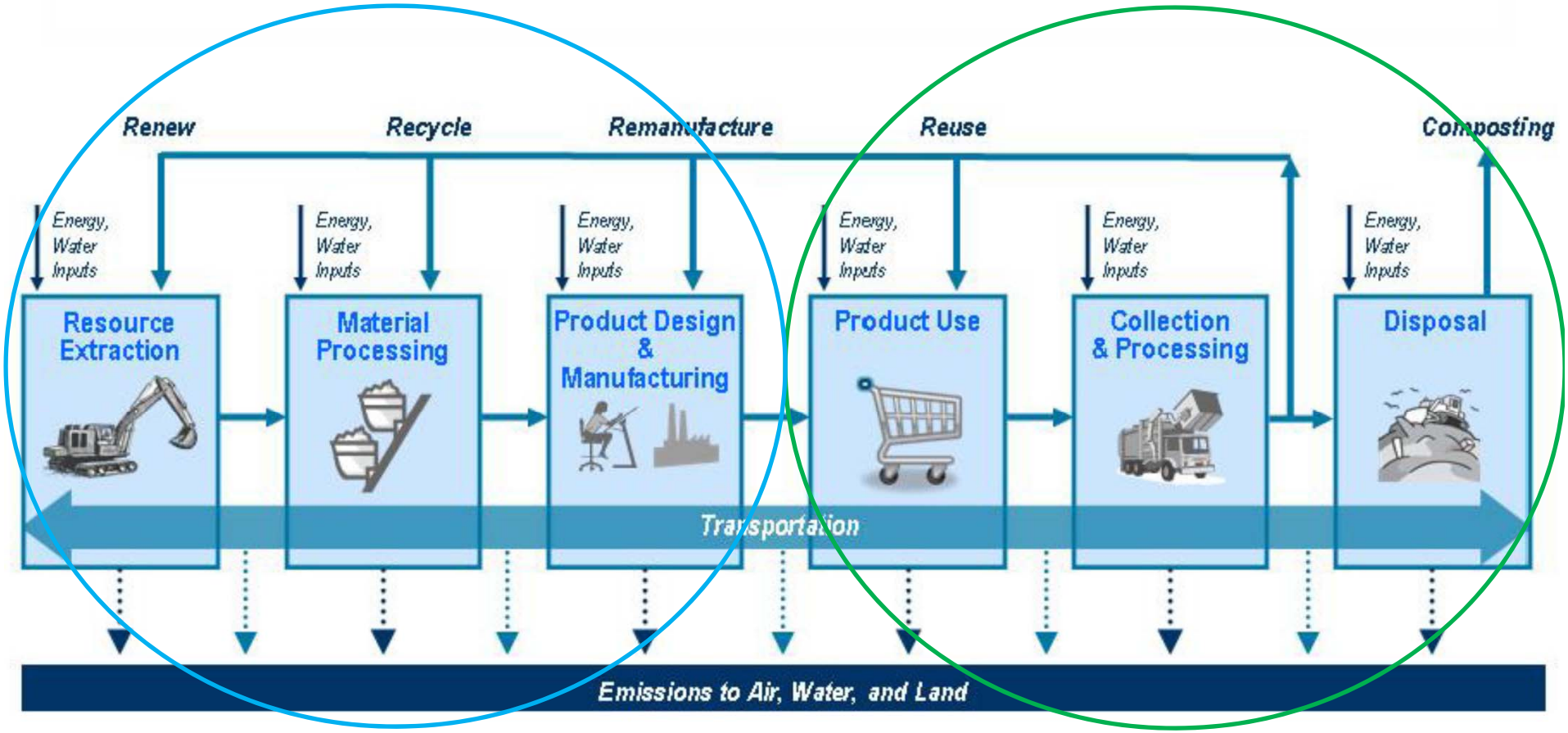
FLOW OF MATERIALS



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GREENHOUSE GAS PROTOCOL

Illustration of Reporting Framework

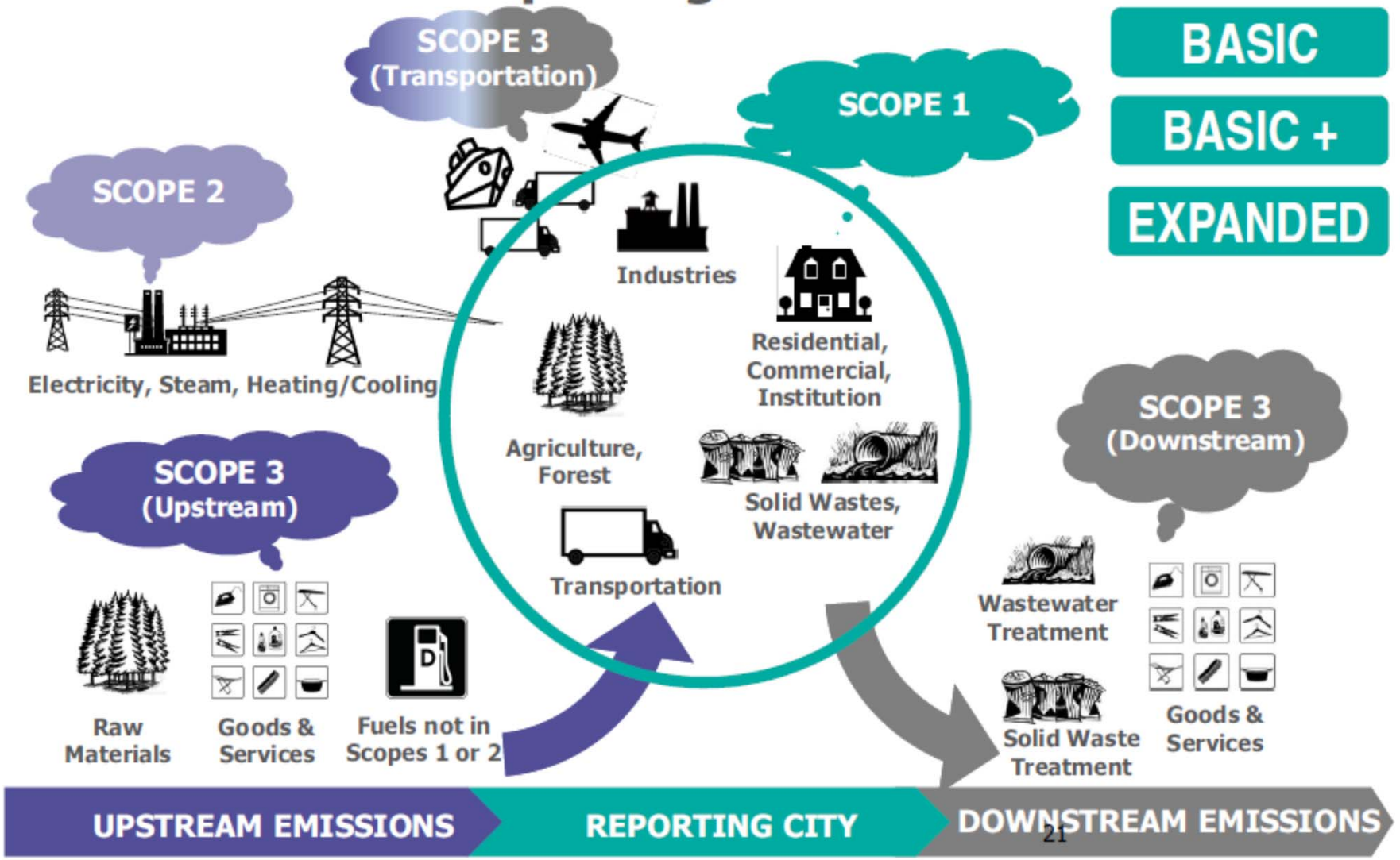

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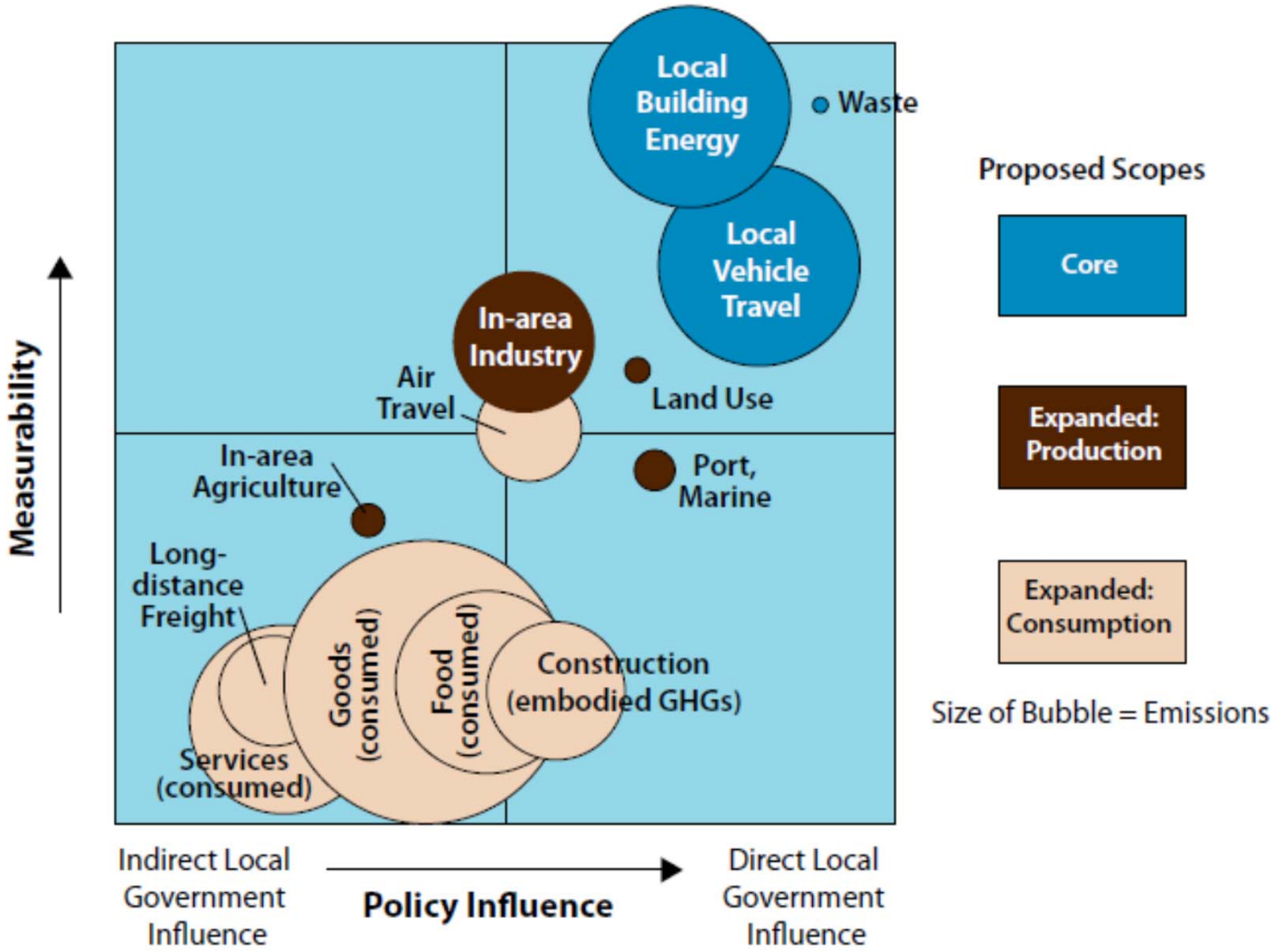
Table 9. Criteria Used to Assess Emissions Sources and Develop GHG Tracking Framework

Criterion	Purpose
Policy Influence	Emphasize sources for which community actions can have a measureable impact on global GHG emissions through policy levers available directly to local governments or indirectly through partnerships or programs with business or the community.
Measurability & Consistency	Ensure that data for a given source are readily available at reasonable cost, so that progress can be assessed using similar estimates over time. Design methods with an eye to potential changes in data availability, data structure, and reporting over time, taking into account the level of resource expenditure (i.e., cost-effectiveness) of the method.
Transparency and Simplicity	Enable the communication of metrics in a clear, credible, and understandable manner to the public and decision-makers.
Accuracy	Ensure that uncertainties are minimized to the extent possible, that quantification avoids any systematic bias (over or under-estimation), that minimizes overlaps among emissions sources (double-counting), and that provides a reliable basis for decision-making.
Completeness	Ensure emissions sources that are both relevant and significant are included.
Balance	Aim to reflect not only the emissions impacts of policies that can reduce emissions – whether those emissions occur within or outside the geographical boundary – but also of policies and actions by government, businesses, or households that could increase global emissions.

GHG MEASURABILITY VS LOCAL GOVERNMENT POLICY INFLUENCE



King County, WA

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TWO INVENTORY METHODS

Geographic Based

- Boundary
  - Occurring within a specified area
- Data
  - Reported or Measured
    - Emissions
    - Energy & Fuel Use

Consumption Based

- Boundary
  - All materials and services consumed in a specified community
  - Completed per commodity or on the $ / macroeconomic level
- Data
  - Estimated annual flow of $ or materials used
  - Life Cycle emissions factor for those materials or $ spent (EIO LCA databases)

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EXAMPLE OF UPSTREAM EMISSIONS FROM FOOD

GHG Emissions (CO2e) = Material or Service Flow (M) X Emission Factor (EF)

Table SC.1.1. Food EFs for various food categories (in purchaser prices)

Food Category	EIOLCA GHG EF (kg-CO_2e/2002$)
Food at home	
Cereals and bakery products	0.85
Meats, poultry, fish, and eggs	1.86
Dairy products	2.39
Fruits and vegetables	0.89
Other food at home	0.98

From: Hillman, T. (2008). Doctoral Dissertation.

Spend $500,000 on fruits and vegetables
$500,000 x 0.89 = 445 mt CO2e

- Do we have measurable data on all of the flows?
- Can we get emission factors for all of the flows?
- Can we affect the flow or the emission factor?
- How would we get to zero and measure that?

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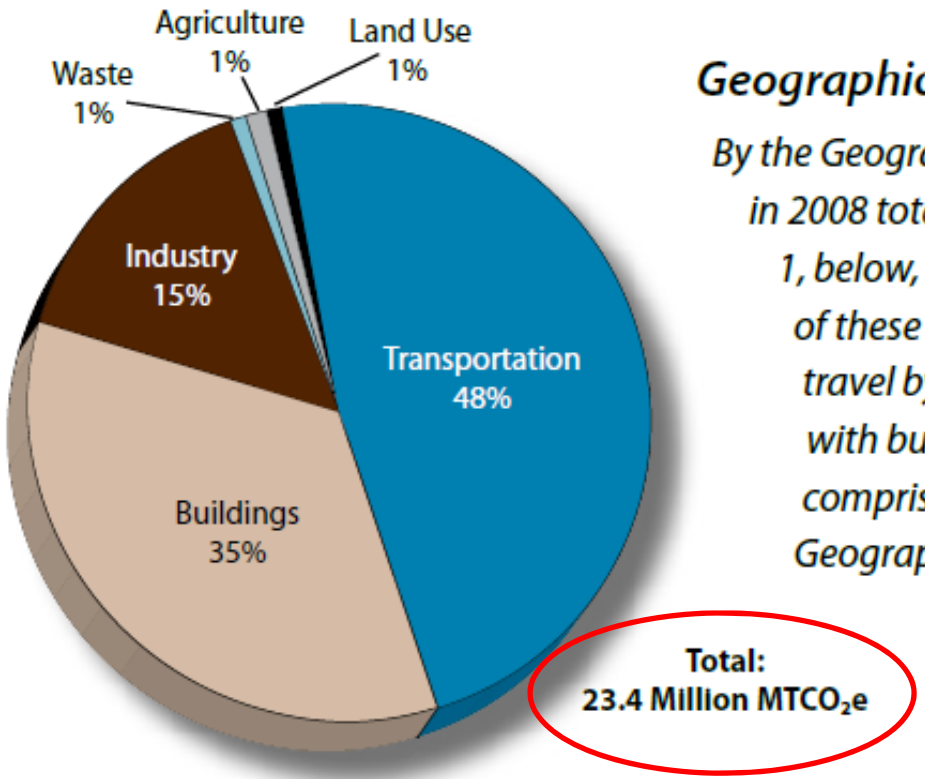
Figure 1. King County 2008 GHG Emissions by Sector, Geographic-plus Methodology



Geographic-plus Inventory Results

By the Geographic-plus methodology, King County's emissions in 2008 totaled 23.4 million $MTCO_2e$. As indicated in Figure 1, below, transportation is responsible for about half of these emissions, in large part from personal vehicle travel by King County residents. Emissions associated with buildings, including homes and businesses, also comprise slightly more than one-third of King County's Geographic-plus emissions.

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Figure 3. King County 2008 *Consumption-Based* GHG Emissions by Life-cycle Phase

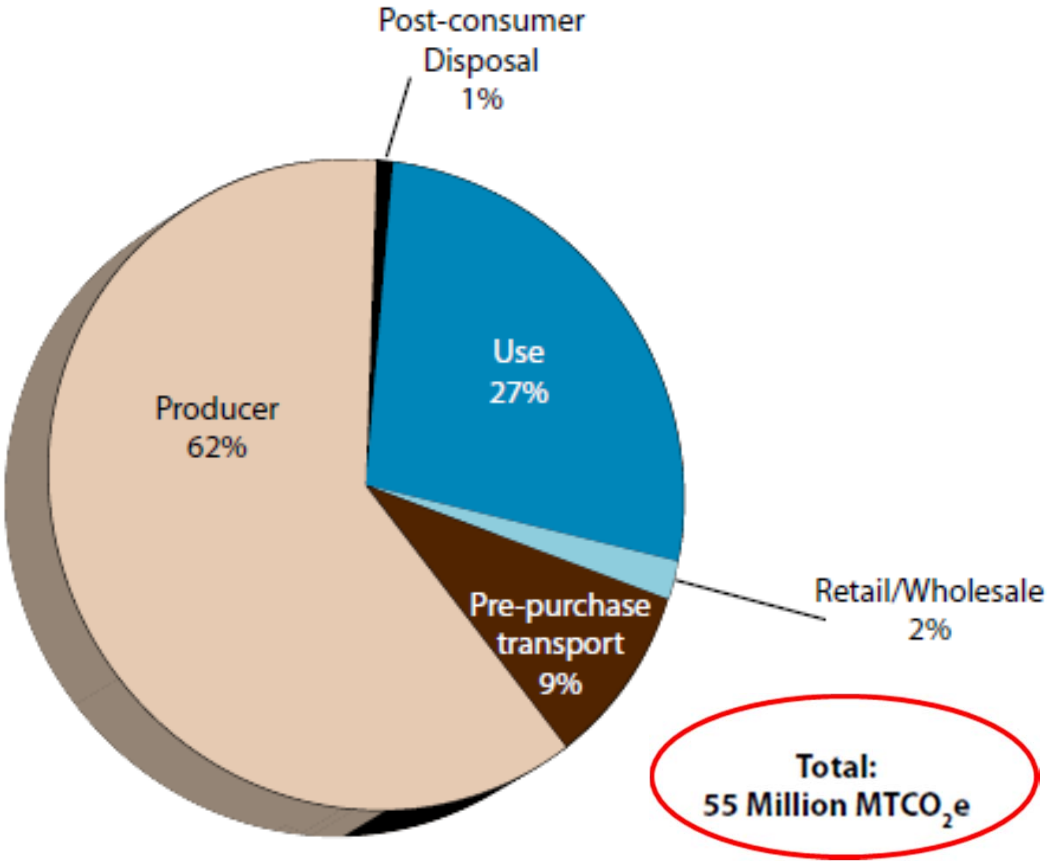
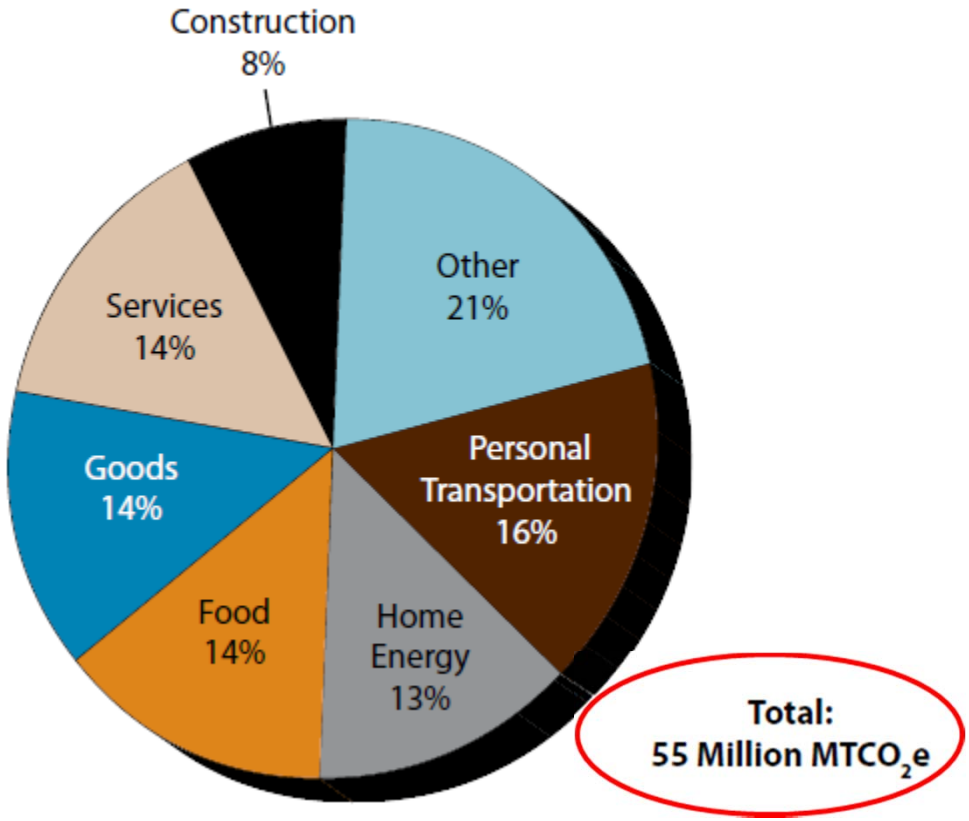


Figure 4. King County 2008 GHG Emissions by Category of Consumption, Consumption-based Methodology



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PROS AND CONS OF THE CONSUMPTION INVENTORY

Pros:

- We get to the "root cause" of emissions.
- We know upstream emissions exist so how can we not address them?
- We want our actions to be recognized as the real reduction activities that they are.
- The consumption inventory is likely much bigger than our "in-boundary" inventory and tells a more complete story.
- Addresses leakage and outsourcing of emissions.

Cons:

- If we want to account for reductions we need to include all sources and the full upstream effects in our inventory.
- Getting to zero could be challenging or impossible to calculate.
- Standards are few and new.
- Getting a complete and accurate picture is likely expensive and time consuming.

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VOLUNTEERS?

- Learn, understand and present on life cycle and consumption based inventory examples and experiences?
- Learn, understand and present on life cycle and consumption based inventory methods, tools, and data sources?
- Learn, understand and present on landfill and composting gas collection, management, and destruction best practices?

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