SWANA Northern Lights 2021 Conference - Waste Composition Profiles

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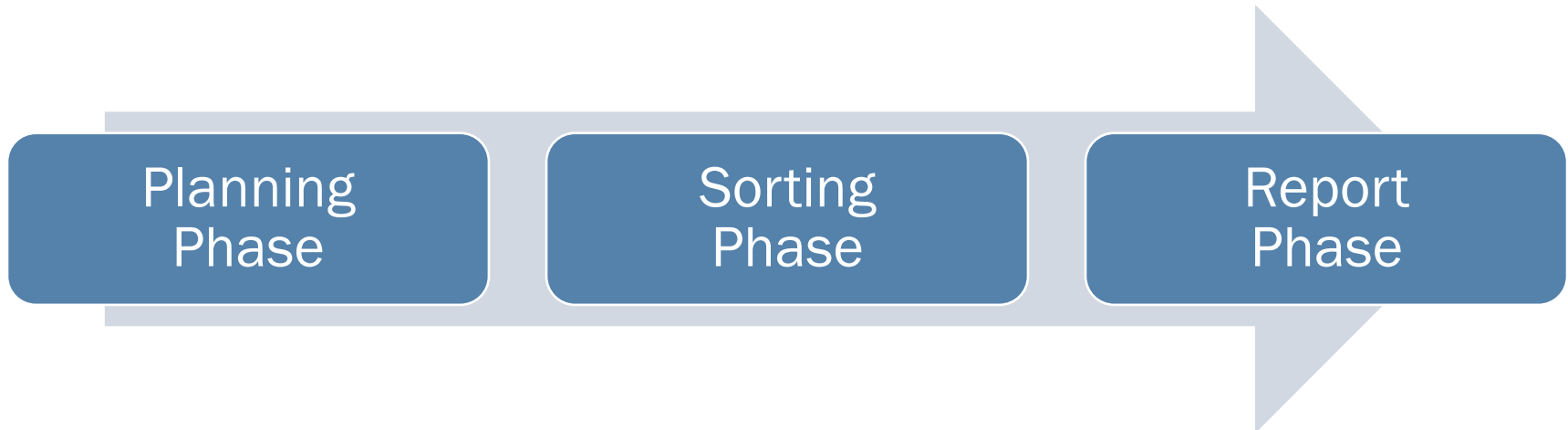complex world | CLEAR SOLUTIONS™

Agenda

- Overview of waste composition results
  - What is it? Intentions?
  - Benefits?
  - Approaches?
- Case Studies
  - Case 1: Town vs. City in Alberta → Community programs
  - Case 2: EPR vs. Non-EPR program → BC vs. AB Cities
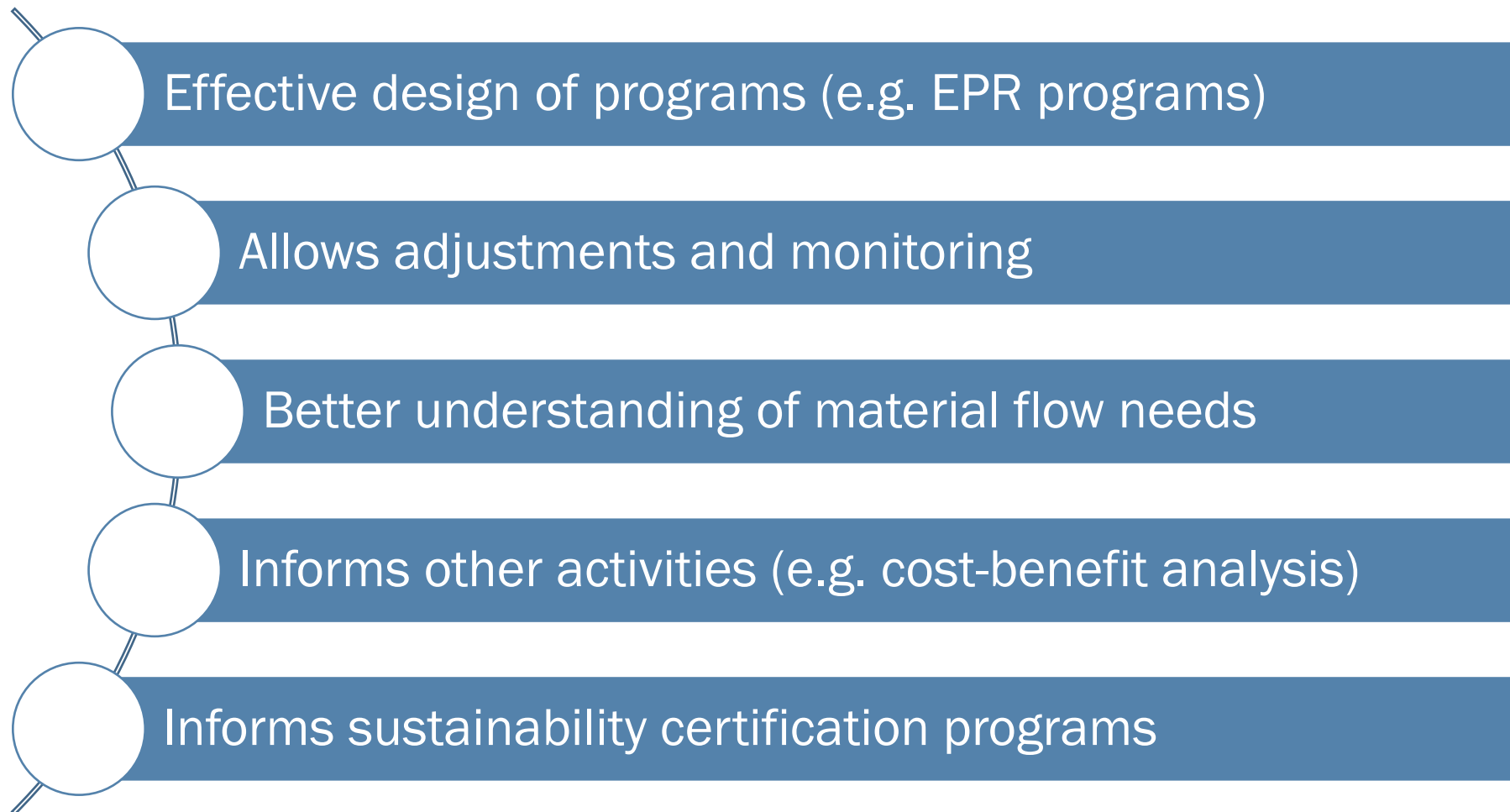 - Case 3: Change Approaches → Integrate EPR sorting
- Summary

Waste Characterization Studies
General Requirements & Outcomes

- Amount, composition, & quality (nature) of all waste by:
  - Back-end (all)   → off a truck
 - Functional (activity/groups)   → generator (e.g. curbside)

Planning Phase	Sorting Phase	Report Phase

Benefits

- Effective design of programs (e.g. EPR programs)

- Allows adjustments and monitoring

- Better understanding of material flow needs

- Informs other activities (e.g. cost-benefit analysis)

- Informs sustainability certification programs

Approaches

- CCME (1999)
  - Waste Characterization Methods

- United Nations Industrial and United Nations Environment (1991)
  - Accounting perspective

- ASTM D 5231-92 (Reapproved 2016):
  - Standard Test Method for Determination of the Composition of Unprocessed MSW

- Provincial (Alberta) Waste Characterization Framework (2005)
  - Provides statistical approach
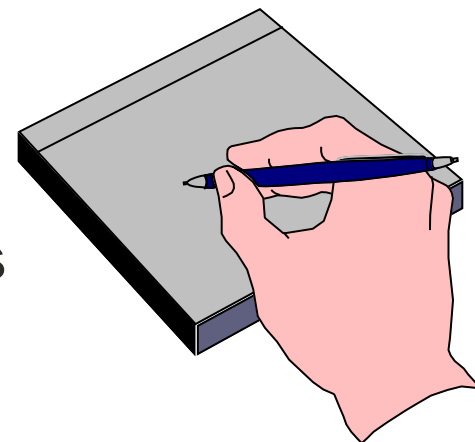
Case Studies

Case 1: Town vs. City in Alberta

Community programs

Case 2: EPR vs. Non-EPR program

BC vs. AB Cities

Case 3: Change Approaches

Integrate EPR sorting specifics

Case 1: Town vs. City in Alberta

Town

- < 50,000 residents

- Weekly garbage and recycling collection

- No SSO

- 1 week study in the Fall
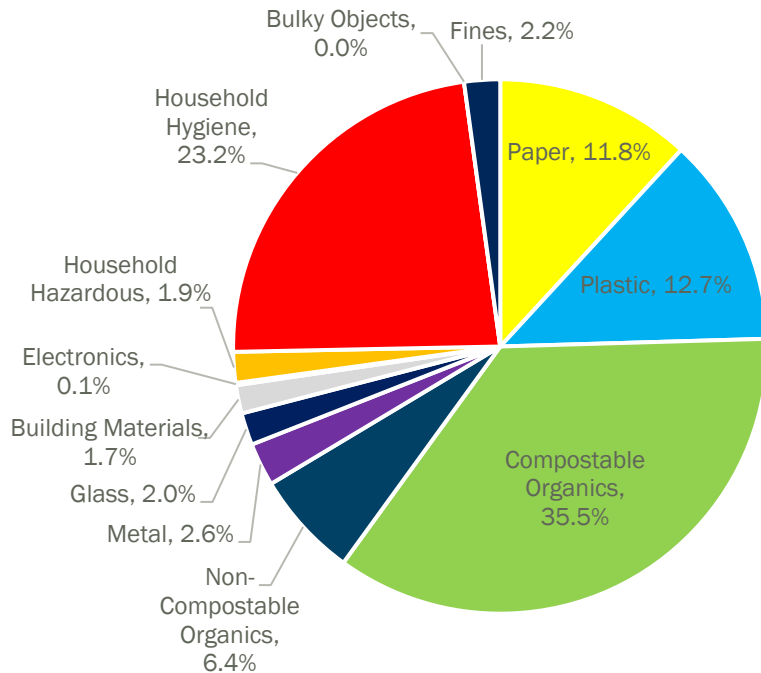
- Single family

- Curbside study

City

- 50,000+ residents

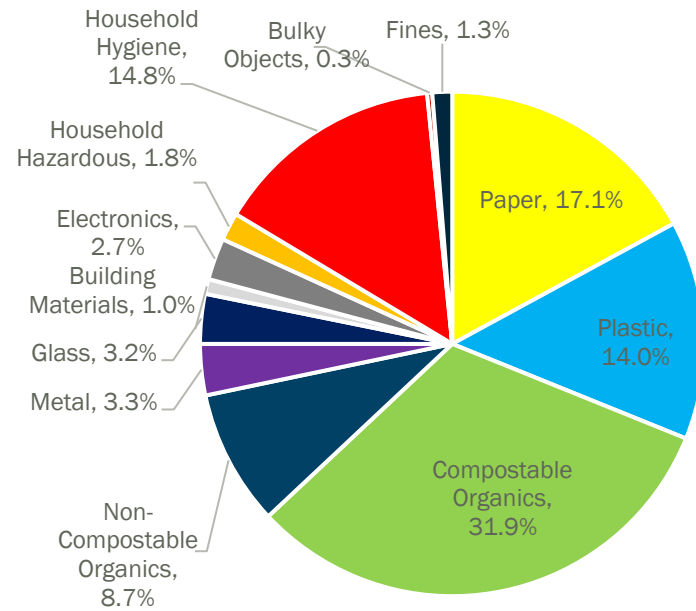- Weekly garbage and recycling collection

- No SSO

- 1 week study in the Fall

- Single family

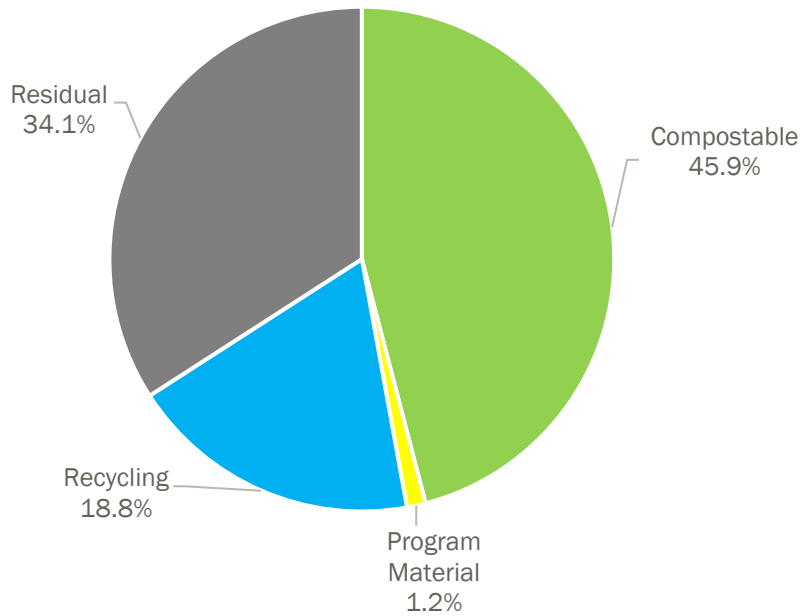- From trucks

Case 1: Town vs. City in Alberta

Town, AB

- Bulky Objects, 0.0%
- Fines, 2.2%
- Household Hygiene, 23.2%
- Paper, 11.8%
- Plastic, 12.7%
- Household Hazardous, 1.9%
- Electronics, 0.1%
- Building Materials, 1.7%
- Glass, 2.0%
- Metal, 2.6%
- Non-Compostable Organics, 6.4%
- Compostable Organics, 35.5%

City, AB

- Household Hygiene, 14.8%
- Bulky Objects, 0.3%
- Fines, 1.3%
- Household Hazardous, 1.8%
- Electronics, 2.7%
- Building Materials, 1.0%
- Glass, 3.2%
- Metal, 3.3%
- Paper, 17.1%
- Plastic, 14.0%
- Non-Compostable Organics, 8.7%
- Compostable Organics, 31.9%

Case 1: Town vs. City in Alberta

Town, AB

Residual
34.1%

Compostable
45.9%

Recycling
18.8%

Program
Material
1.2%

City, AB

Compostable,
37.3%

Residual,
40.1%

Recycling,
18.5%

Program
Material,
4.1%

Diversion potential based on "current" community programs
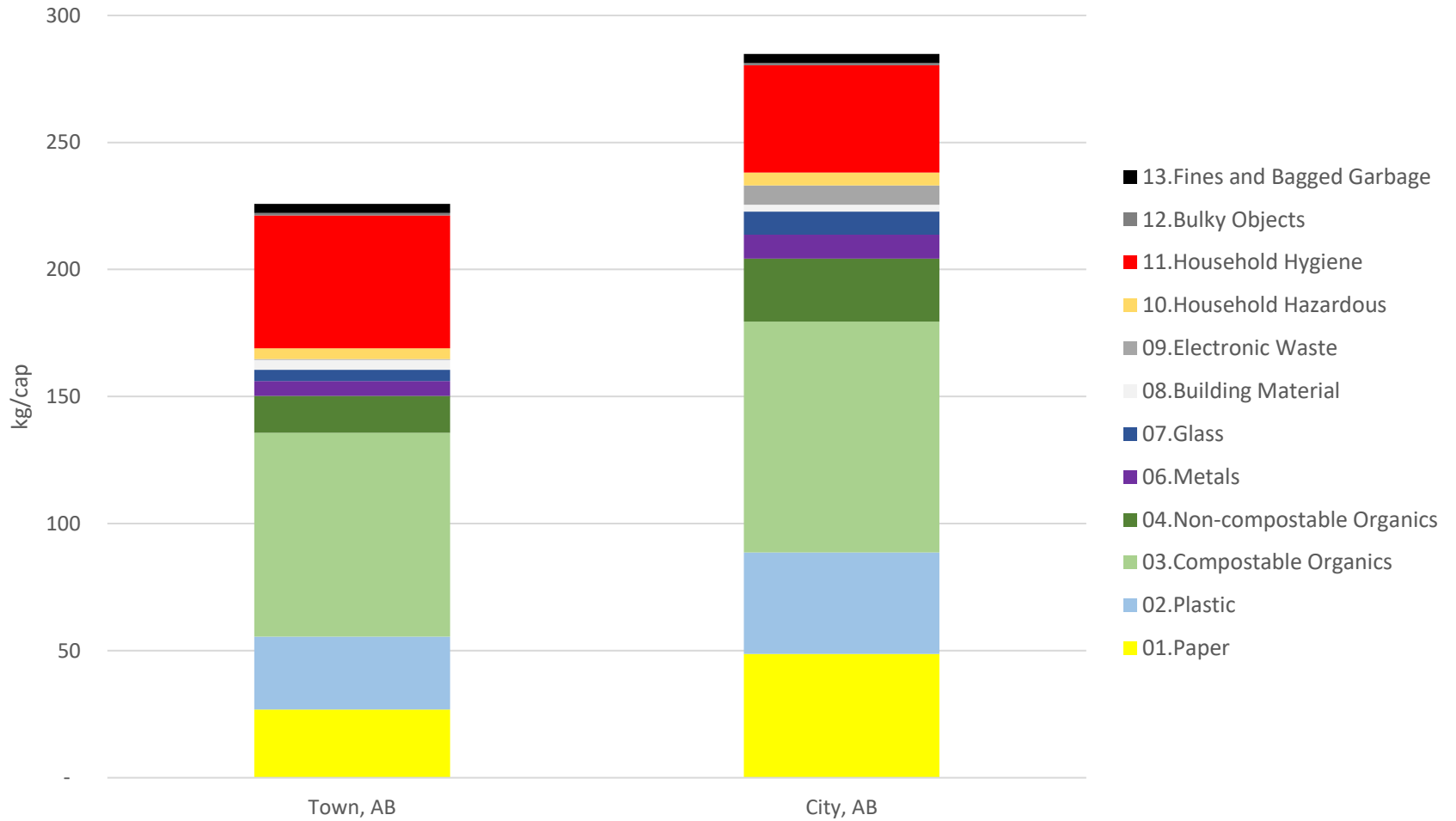
EPR

- City in BC

- 50,000+ residents

- Weekly garbage and recycling collection

- No SSO

- 1 week study in the Fall

- Single family

- From trucks

Non-EPR

- City in AB

- 50,000+ residents

- Weekly garbage and recycling collection

- No SSO

- 1 week study in the Fall

- Single family
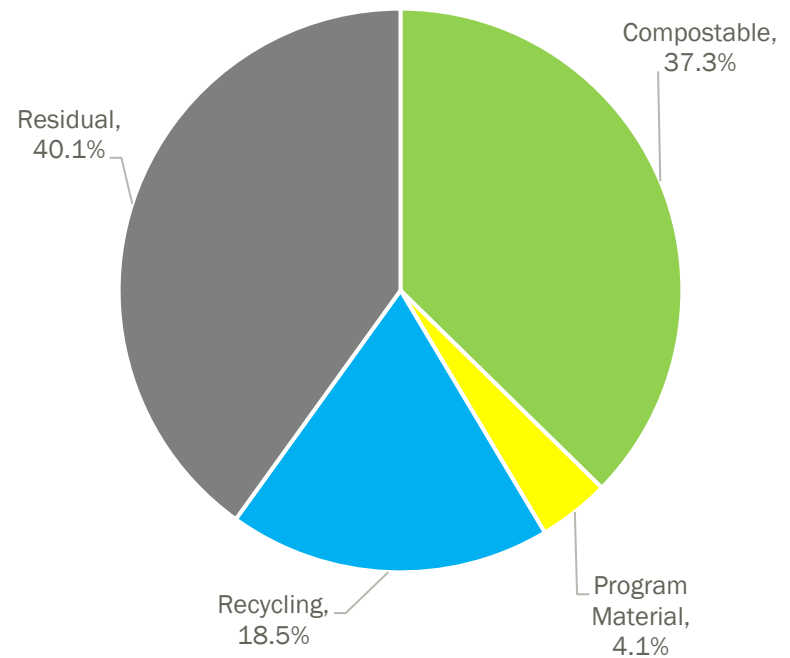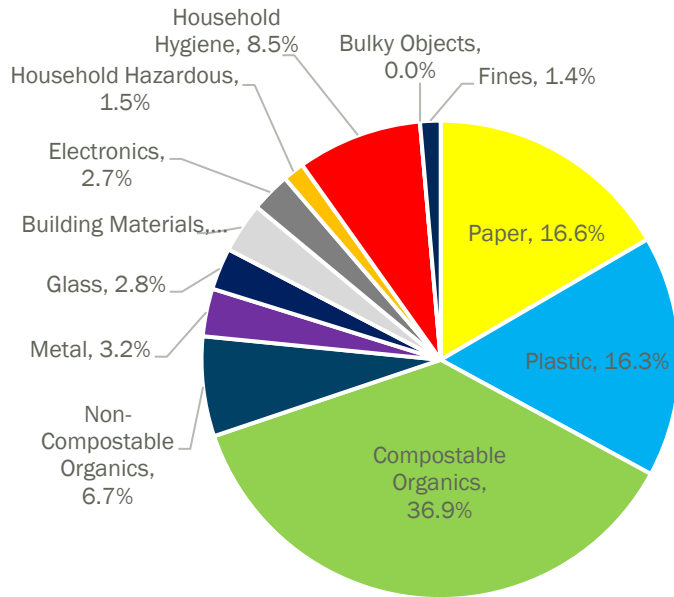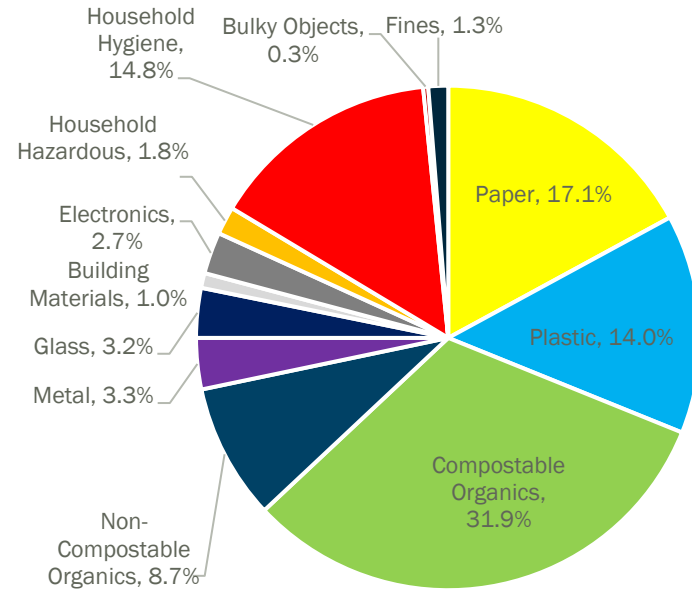
- From trucks

Case 2: EPR vs. Non-EPR

EPR (City, BC)

- Household Hygiene, 8.5%
- Bulky Objects, 0.0%
- Fines, 1.4%
- Household Hazardous, 1.5%
- Electronics, 2.7%
- Building Materials,...
- Glass, 2.8%
- Metal, 3.2%
- Non-Compostable Organics, 6.7%
- Compostable Organics, 36.9%
- Plastic, 16.3%
- Paper, 16.6%

Non-EPR (City, AB)

- Household Hygiene, 14.8%
- Bulky Objects, 0.3%
- Fines, 1.3%
- Household Hazardous, 1.8%
- Electronics, 2.7%
- Building Materials, 1.0%
- Glass, 3.2%
- Metal, 3.3%
- Non-Compostable Organics, 8.7%
- Compostable Organics, 31.9%
- Plastic, 14.0%
- Paper, 17.1%

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Case 2: EPR vs. Non-EPR

EPR (City, BC)

Non-EPR (City, AB)
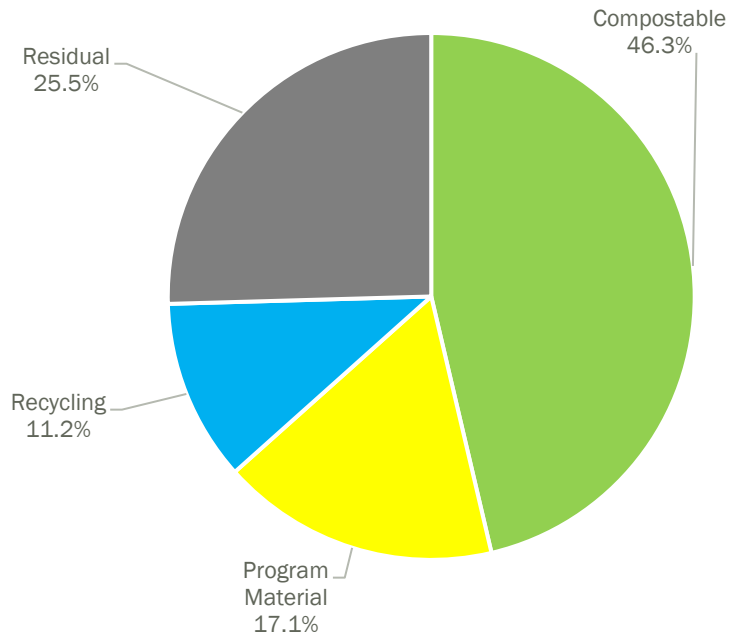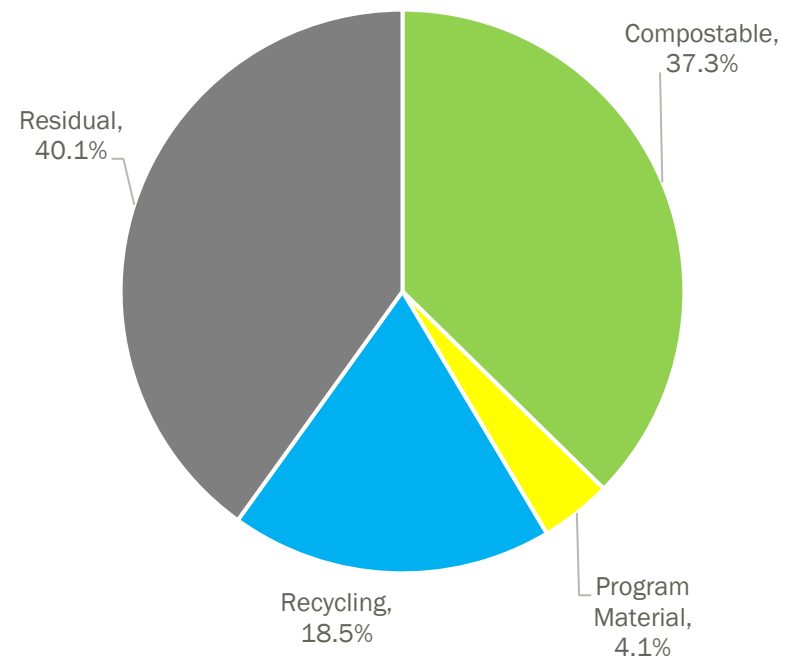
EPR (City, BC) pie chart:
- Compostable 46.3%
- Residual 25.5%
- Recycling 11.2%
- Program Material 17.1%

Non-EPR (City, AB) pie chart:
- Compostable, 37.3%
- Residual, 40.1%
- Recycling, 18.5%
- Program Material, 4.1%

Diversion potential based on "current" community programs

Case 2: EPR vs. Non-EPR

Legend:
- 13.Fines and Bagged Garbage
- 12.Bulky Objects
- 11.Household Hygiene
- 10.Household Hazardous
- 09.Electronic Waste
- 08.Building Material
- 07.Glass
- 06.Metals
- 04.Non-compostable Organics
- 03.Compostable Organics
- 02.Plastic
- 01.Paper
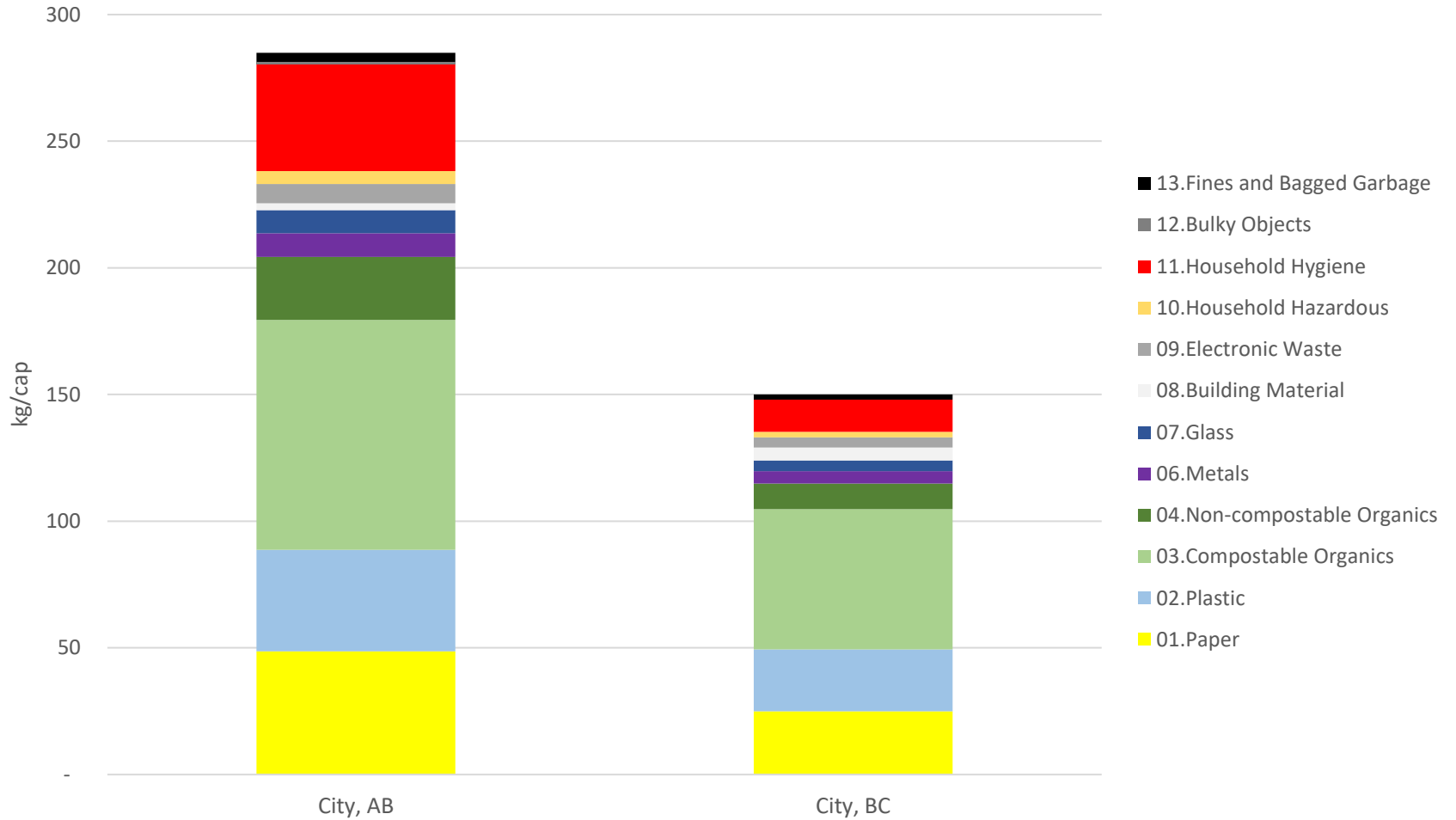
Case 3: Integrating EPR sorting

In BC – secondary sort

- 2014 – 57 Categories
- 2015 – 150 Categories
- 2018 – 168 Categories
- 2020 – 171 Categories

More categories added:

- As program matured and developed
- More specific categories

Why do EPR sorting?

- Assessment of EPR programs (e.g. what is not recovered?)

- Ties well with existing (community) waste composition studies

- Solid waste management plans and diversion goals

Value-add Benefits

- Aggregated results from various waste compositions (e.g. provincially)

- Temporal vs. spatial
    - Seasonality (timing)
    - Geographical – population

- Different sectors – SF, MF, & ICI

Summary

Planning Phase | Audit Phase | Report Phase

Understand:
- quantity,
- composition, &
- quality (nature)

1. Collect   2. Sort   3. Weigh

Case studies:
1. Town vs. City in Alberta
2. EPR vs. Non-EPR program
3. Change Approaches (adding EPR sorting)

Thank you!

Questions?

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