

# Summary Report

## Practices and Perceptions of Urban Forest Waste Generation and Utilization in Virginia



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# Overview

- **Background and rationale for study**
- **Study methods**
- **Key study findings**
- **Conclusions and Q & A**

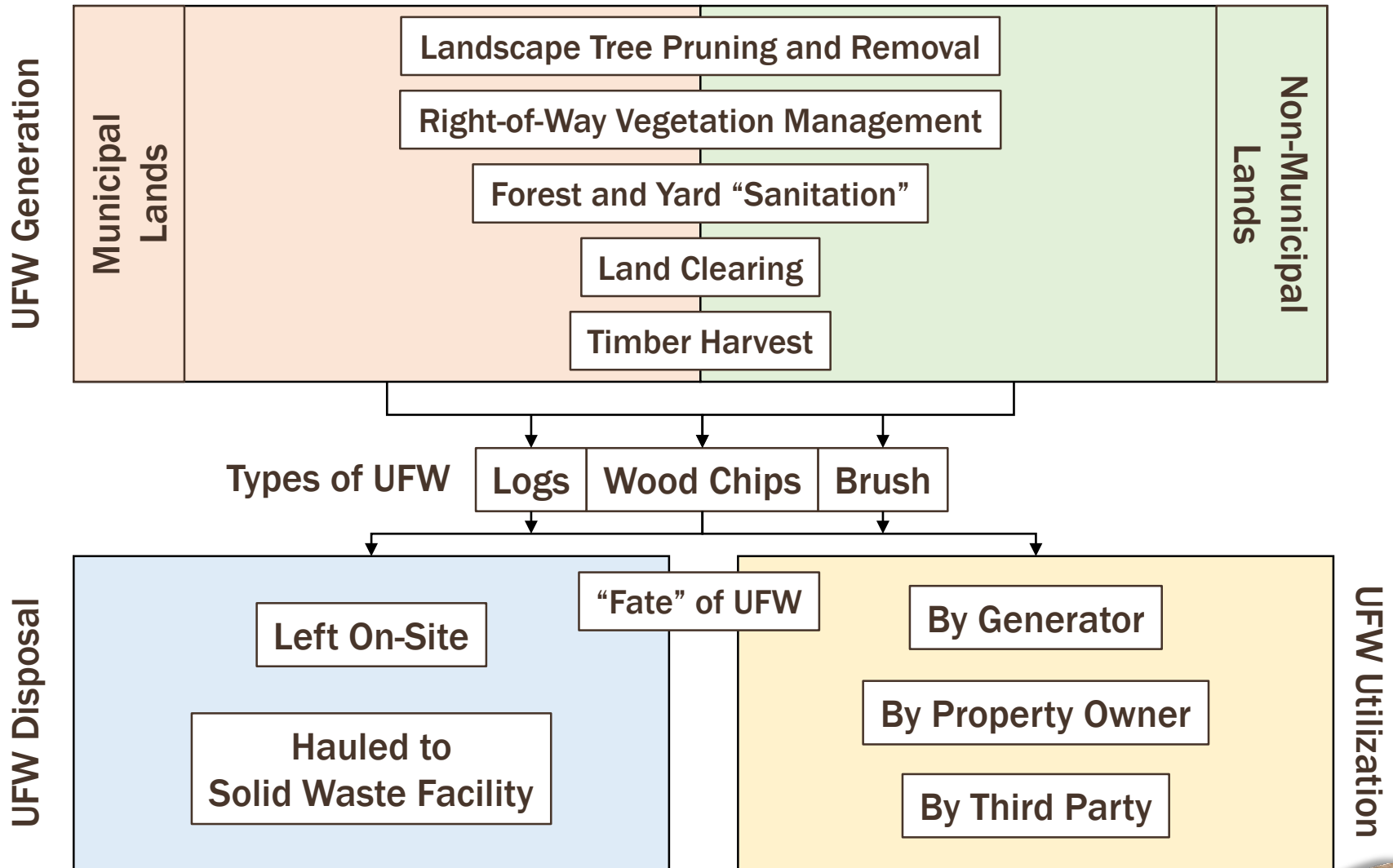


# Background and Rationale for Study

- **Issue:** no statewide empirical information about urban forest waste generation and utilization
- **Need:** solid information to guide technical assistance and capacity building across the state
- **Study goals:**
  - Identify the origin and fate of urban forest waste (UFW)
  - Estimate the amount of UFW generated by primary public and private urban forestry operations
  - Identify the urban forest products (UFP) created when UFW is utilized rather than disposed
  - Understand the perceptions of urban forestry operators toward UFW and UFP

# Study Methods

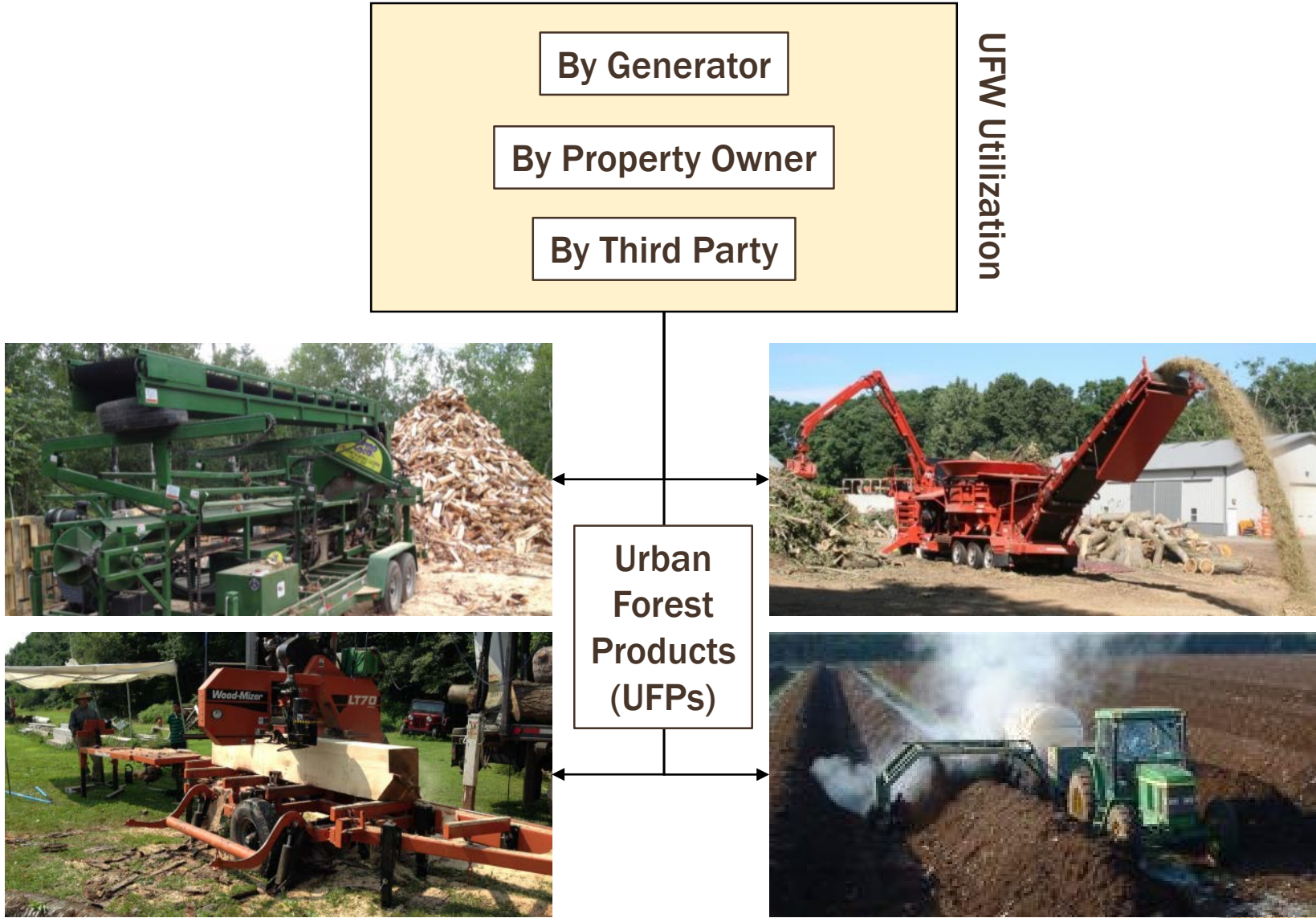
## CONCEPTUAL MODEL





# Study Methods

## CONCEPTUAL MODEL



# Study Methods

## STUDY POPULATION AND SAMPLING FRAME

- 91 “urban” municipalities
  - All independent cities (38)
  - All incorporated towns >2.5k population (48)
  - All counties >826 persons per sq. mile (5)
- 828 ISA Certified Arborists with VA mailing address

### **Municipal Employees:**

- Urban foresters
- City arborists
- Horticulturalists
- Parks & rec. administrators
- Public works administrators
- City/town/county managers
- City/town/county planners

61%  
Resp.

### **Private Arborists:**

- Tree care companies
- Landscape companies
- Electric service providers
- VDOT employees
- Institutions
- Universities
- Arboreta

31%  
Resp.

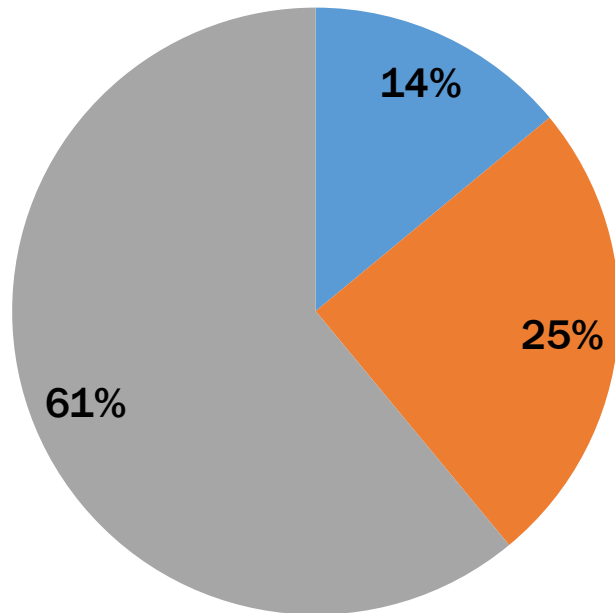
- Web-based survey conducted in spring of 2014

# Key Study Findings

Do operators know how much UFW they are generating?

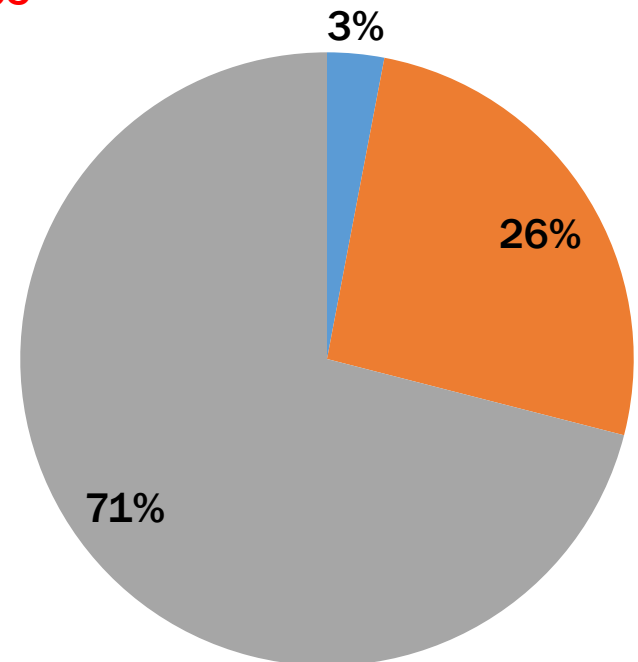
## Municipal Operations

n = 44



## Private Operations

n = 65



- Keep detailed records
- Can provide an estimate
- Cannot provide an estimate

p = 0.114

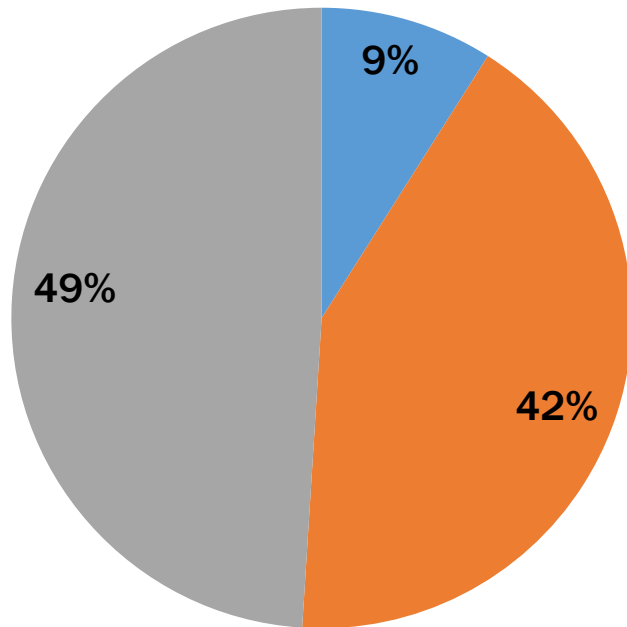


# Key Study Findings

Do operators know the fate of the UFW they are generating?

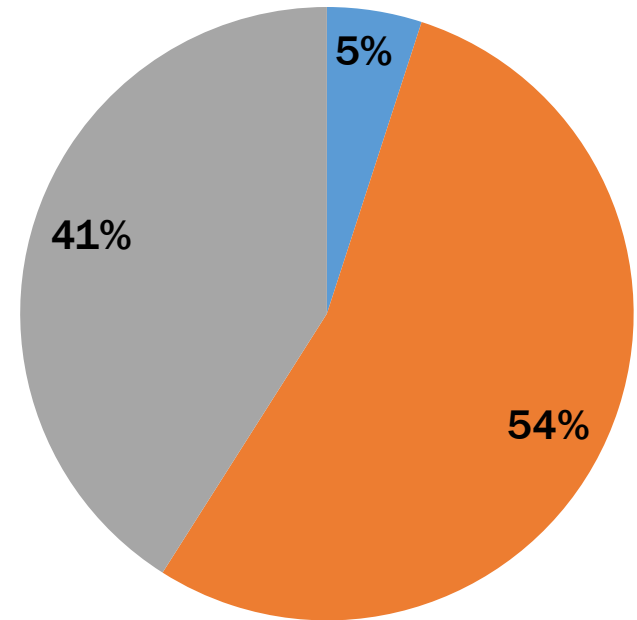
## Municipal Operations

n = 44



## Private Operations

n = 63



- Keep detailed records
- Can provide an estimate
- Cannot provide an estimate

p = 0.388

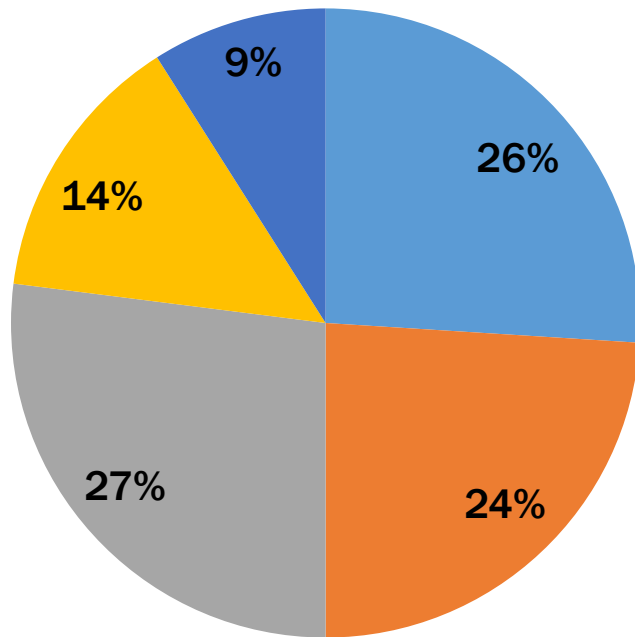


# Key Study Findings

What is the fate of logs generated as UFW by these operators?

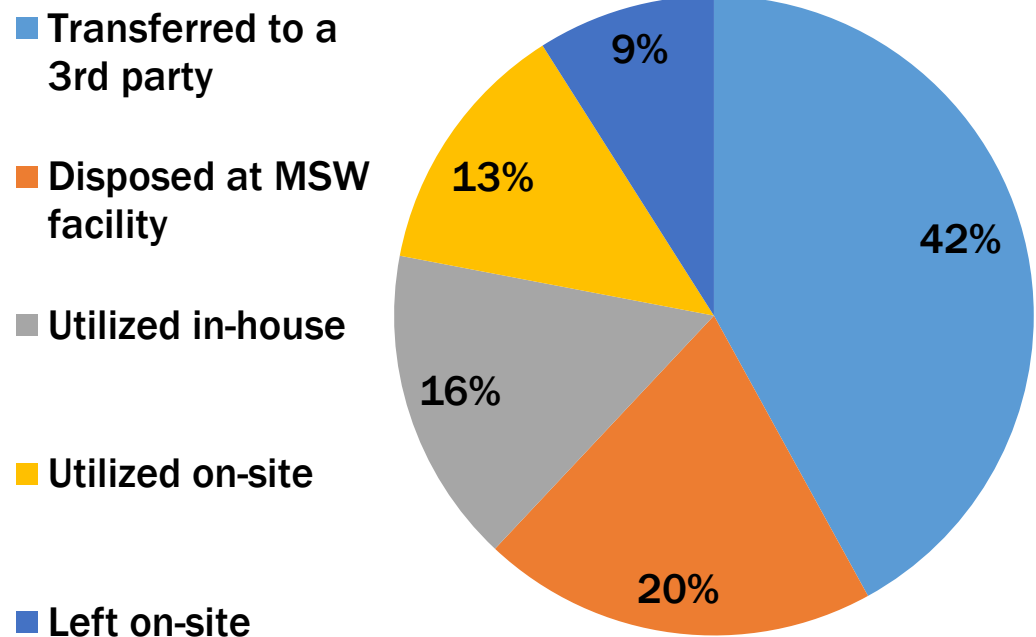
## Municipal Operations

n = 19



## Private Operations

n = 35



# Key Study Findings

What UFPs are created from the logs that are utilized?

## Municipal Operations

Top 3 UFPs:

n = 10

**1. Firewood (42%)**

**2. Lumber (18%)**

**3. Mulch (8%)**

## Private Operations

Top 3 UFPs:

n = 12

**1. Firewood (52%)**

**2. Lumber (17%)**

**3. Mulch (17%)**

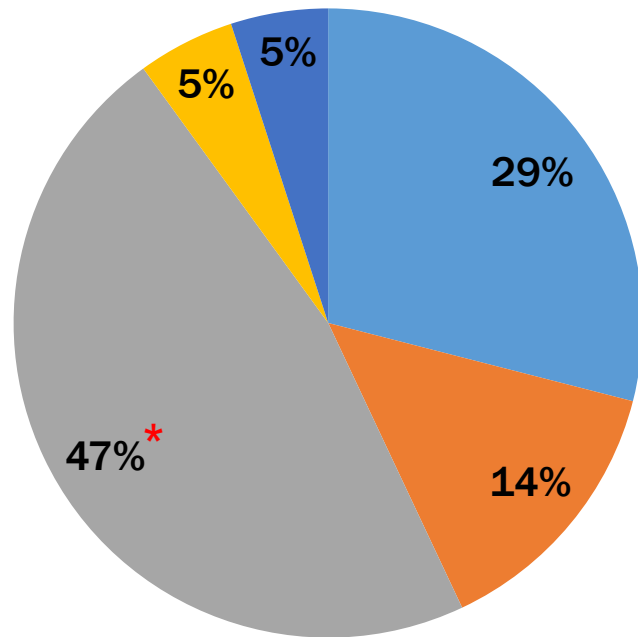


# Key Study Findings

What is the fate of wood chips generated as UFW by these operators?

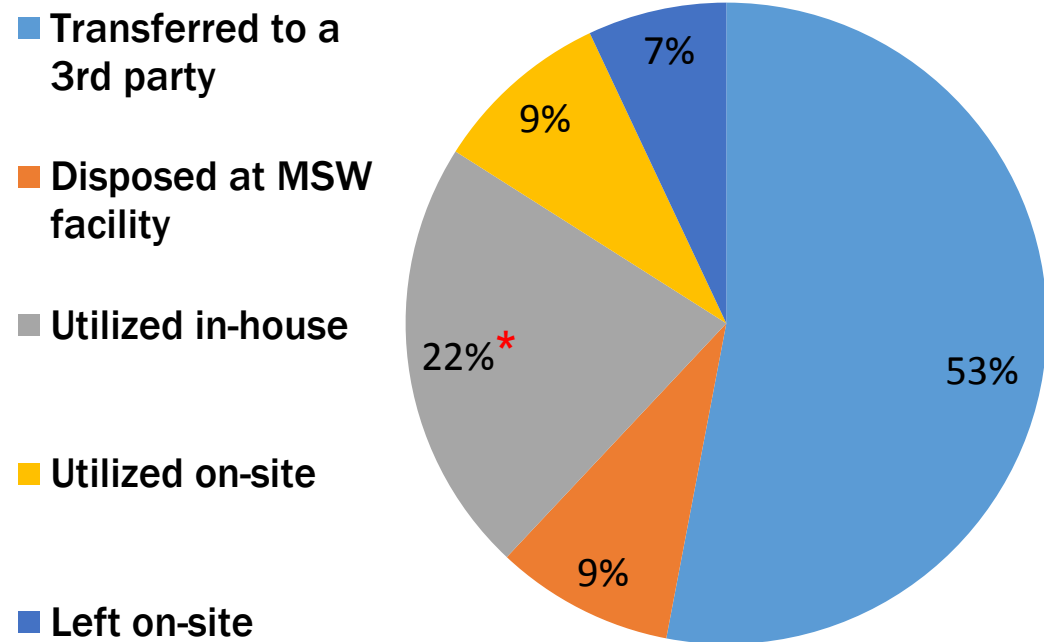
## Municipal Operations

n = 18



## Private Operations

n = 35



\*p = 0.041

# Key Study Findings

What UFPs are created from the wood chips that are utilized?

## Municipal Operations

Top 3 UFPs:

n = 16

**1. Mulch (75%)**

**2. Compost (21%)**

**3. Pellets (3%)**

## Private Operations

Top 3 UFPs:

n = 15

**1. Mulch (63%)**

**2. Compost (20%)**

**3. Biomass (10%)**

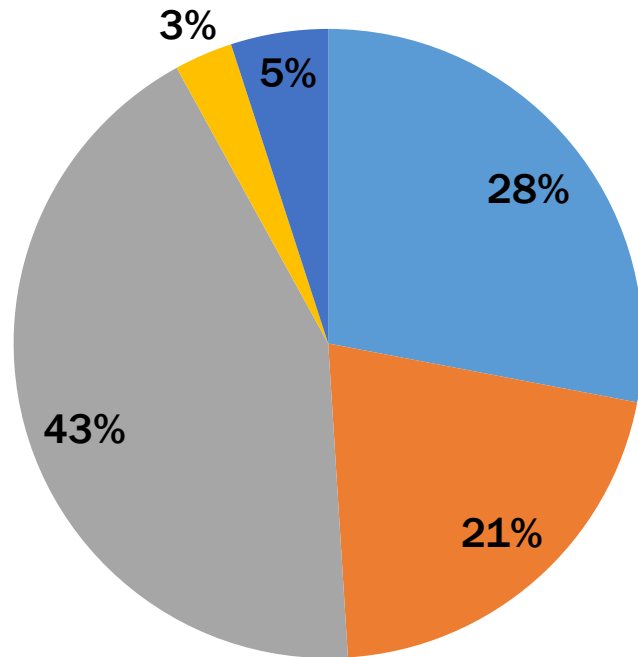


# Key Study Findings

What is the fate of brush generated as UFW by these operators?

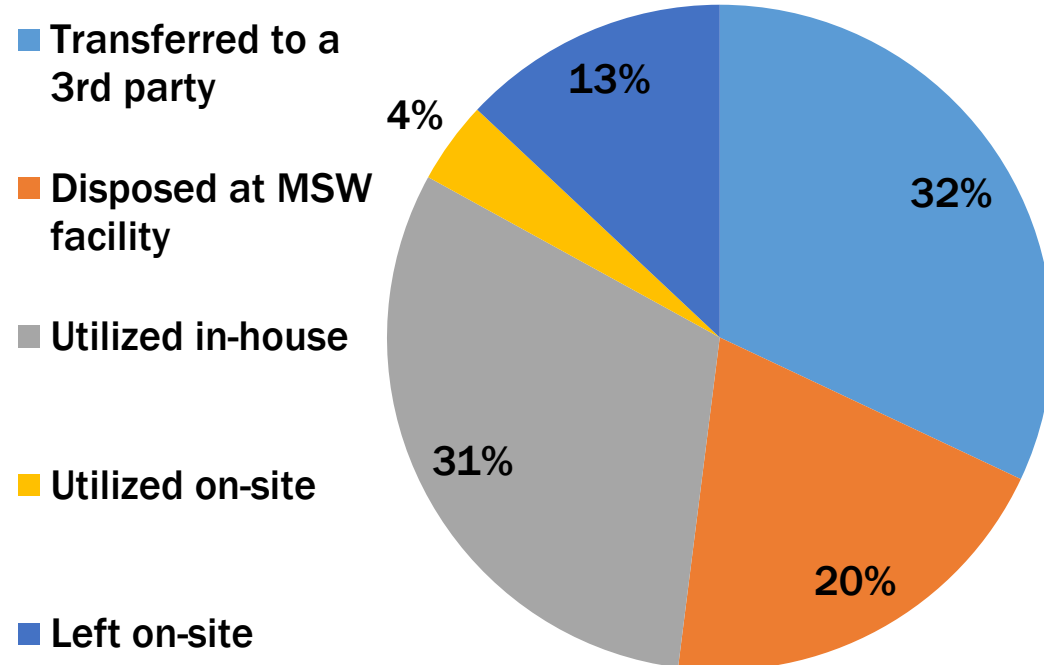
## Municipal Operations

n = 20



## Private Operations

n = 33



# Key Study Findings

What UFPs are created from the brush that is utilized?

## Municipal Operations

Top 3 UFPs:

n = 13

**1. Mulch (76%)**

**2. Compost (21%)**

**3. Biomass (4%)**

## Private Operations

Top 3 UFPs:

n = 13

**1. Mulch (52%)**

**2. Compost (28%)**

**3. Other (13%)**

# Key Study Findings

## How do operators perceive UFW utilization?

Level of agreement scale: 1 = strongly agree, 2 = somewhat agree, 3 = neither agree nor disagree, 4 = somewhat disagree, 5 = strongly disagree.

My operation seeks to increase UFW utilization...	Municipal (n=53)			Private (n=162)			p-value <sup>1</sup>
	Mean	Mode	Range	Mean	Mode	Range	
...for environmental reasons	2.08	2	1-4	2.28	2	1-5	0.403
...for financial reasons	2.36	2,3	1-4	2.69	2	1-5	0.275
...for logistical reasons	2.42	2,3	1-4	2.49	3	1-5	0.559
...for regulatory reasons	2.70	3	1-4	2.95	3	1-5	0.273
Urban forest waste...	Municipal (n=52)			Private (n=153)			p-value
	Mean	Mode	Range	Mean	Mode	Range	
...utilization will be a major issue for the urban forestry industry in the future	2.15	2	1-4	1.97	2	1-5	0.332
...utilization is a major issue for the urban forestry industry currently	2.40	2	1-4	2.25	2	1-5	0.293
...utilization is important to my clients	2.88	2	1-5	2.70	3	1-5	0.084
...disposal is a major cost for my operation	3.19	4	1-5	2.95	3	1-5	0.299
...utilization is a major revenue source for my operation	4.04	4	1-5	3.87	4	1-5	0.557

<sup>1</sup> P-values indicate the difference in response distributions between municipal and private responses across all question options.

# Key Study Findings

What do operators perceive as incentives for increasing UFW utilization?

## Municipal Operations

Top 3 incentives:

n = 52

**1. Avoidance of disposal fees (79%)**

**2. Environmental sustainability of the operation or community (69%)**

**3. Avoidance of transportation or shipping costs (44%)**

## Private Operations

Top 3 incentives:

n = 137

**1. Avoidance of disposal fees (69%)**

**2. Environmental sustainability of the operation or community (67%)**

**3. Avoidance of transportation or shipping costs (53%)**



# Key Study Findings

What do operators perceive as barriers for increasing UFW utilization?

## Municipal Operations

Top 3 barriers:

n = 52

**1. Lack of in-house equipment for processing UFW (56%)**

**2. Lack of in-house space for stockpiling UFW (52%)**

**3. Lack of local processors of UFW (42%)**

## Private Operations

Top 3 barriers:

n = 137

**1. Lack of local processors of UFW (48%)**

**2. Lack of in-house space for stockpiling UFW (41%)**

**3. Logistical difficulties of transporting UFW to processors (40%)**

# Conclusions and Q & A

- Municipalities and private operations reported disposing less than 25% of their UFW at a solid waste facility.
- The majority of logs were utilized to produce firewood or lumber, while the majority of wood chips and brush were utilized to produce mulch or compost.
- Regardless of operation type, UFW is rarely left on-site, indicating that UFW is being handled and transported in the majority of situations.
- Two-thirds of respondents (65%) either agreed or strongly agreed that UFW utilization is a major issue for the urban forestry industry.
- Primary incentives for utilization were avoidance of disposal fees and shipping costs.
- Municipalities cited lack of processing equipment as their primary barrier whereas private arborists cited lack of local processors

