

# NATIONAL MUNICIPAL WASTE COMPOSITION, ENGLAND 2017

This report presents compositional estimates for waste arising from households and municipal waste arising from commercial sector businesses in England in 2017.



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WRAP, 2019, National municipal waste composition, England 2017

**Written by:** Eunomia Research & Consulting Ltd: Rosy Scholes

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## Glossary

C&I Commercial and Industrial

LA Local Authority

HWRC Household Waste and Recycling Centre

WCA Waste Compositional Analysis

WDF WasteDataFlow

WEEE Waste Electrical and Electronic Equipment

## Acknowledgements

We would like to thank all of the local authorities, organisations and companies that provided waste compositional data to assist with this project. In particular, we would like to thank Resource Futures for their work on the compositional analysis of commercial residual waste. We are also grateful to the household estimates peer reviewer Andrew Davey (WRc plc), as well as colleagues in WRAP. Their constructive comments led to several improvements to the household estimates methodology.

# 1.0 Aims and Scope

This report presents estimates of the composition and tonnage arisings for materials in municipal waste collected in England, for the calendar year 2017. It summarises the findings from a wider data synthesis project (*WRAP, 2019, National Household Waste Composition 2017*) which estimated:

- the composition of local authority collected household residual waste and household recycling streams for the UK in 2017 (and each of the devolved nations: England, Wales, Scotland and Northern Ireland); and
- the composition of municipal waste arisings from commercial sector businesses in England in 2017

The UK Government has adopted a definition of municipal waste that includes both household waste and waste from other sources that is similar in nature and composition (i.e. household-like commercial waste). This report brings together both household and commercial composition estimates, to present an estimate of overall composition of municipal waste collected in England, 2017. The data will be used to support policy development, to track progress against pre- and post- EU exit policy goals, and to prepare for different EU exit scenarios. The waste and recycling streams within the scope of the study are presented in Table 1.

Table 1: Municipal residual and recycling streams within the scope of the study

Waste stream	Residual	Recycling
Kerbside	X	X
HWRC	X	X
Bulky waste collections	X	
Street sweepings, cleansing & litter	X	
Bring site recycling		X
Street bins recycling		X
“Other means” recycling		X
<b>Commercial (municipal)</b>	X	X

It is important to note that there are a number of significant limitations associated with the commercial analysis, due to the shortcomings of the available data for commercial municipal

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waste arisings and composition; (see section 2.2.1 for more detail). Any results which include commercial data should be treated as indicative only and interpreted with caution. Limitations relating to commercial municipal waste composition estimates are discussed in a separate report produced as part of this study, (*WRAP, 2019, National Municipal Commercial Waste Composition, England 2017*).

## 2.0 Methodology

### 2.1 Household

The methodology used to estimate household waste composition is similar to that applied in previous national compositional estimates (e.g. England 2010/11 study<sup>1</sup>), so as to facilitate comparability as far as possible. However, some refinements developed in the production of the WRAP 2015 household food waste estimates<sup>2</sup> have also been incorporated in this work.

The analysis underpinning the household waste estimates is as robust as current data allows. Its methodology and outputs have been subject to a thorough peer review. A detailed account of the methodology, and more specific information on uncertainty, as well as the peer review process can be found in the separate household report *National Household Waste Composition 2017* (WRAP, 2019)<sup>3</sup>.

### 2.2 Commercial

The methodology used to estimate the composition of municipal waste from commercial businesses in England was developed specifically for this study. It was first necessary to design a methodology to estimate the total tonnes of commercial municipal waste collected in England 2017, as this data was not readily available. Then a methodology was developed to estimate the composition of commercial municipal residual waste and recycling, which involved bringing together a range of different data sources and applying a number of assumptions. A detailed account of the methodology is included in the separate commercial municipal waste report *National Municipal Commercial Waste Composition – England 2017* (WRAP, 2019)<sup>4</sup>.

#### 2.2.1 Limitations

There were several limitations which are likely to have influenced the accuracy of the commercial composition results. These are explained fully in the commercial report<sup>4</sup>, but as a brief overview:

- There is uncertainty associated with the total arisings of municipal commercial waste in England for 2017. It was necessary to make a number of assumptions in order to strip out non-municipal waste from C&I arisings data published by Defra<sup>5</sup> and there was a lack of

<sup>1</sup> Defra, 2012, Updated compositional estimates for local authority collected waste and recycling in England, 2010/11 - EV0801 <http://randd.defra.gov.uk/Default.aspx?Module=More&Location=None&ProjectID=18237>

<sup>2</sup> WRAP Synthesis of Food Waste Compositional Data 2014 & 2015

<sup>3</sup> WRAP, 2019, National Household Waste Composition 2017, =.

<sup>4</sup> WRAP, 2019, National Municipal Commercial Waste Composition – England 2017,.

<sup>5</sup> Defra, 2019, UK Statistics on Waste

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/784263/UK\\_Statistics\\_on\\_Waste\\_statistical\\_notice\\_March\\_2019\\_rev\\_FINAL.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/784263/UK_Statistics_on_Waste_statistical_notice_March_2019_rev_FINAL.pdf)

published evidence available to inform these assumptions. The assumptions are detailed in a separate report produced as part of this study - *National Municipal Commercial Waste Composition – England 2017 (WRAP, 2019)*<sup>6</sup>.

- The recycling rate applied to the overall municipal commercial tonnage (35%), while based on ongoing WRAP bottom-up analysis and considered the best available estimate, is not robust.<sup>7</sup> Recognising the uncertainty over the figure, WRAP has used it as a “central case” to inform recent a Defra consultation, while also conducting sensitivity analysis on assumptions of recycling rates of 30% and 40%.
- The overall (LA and non-LA collected) commercial waste composition estimates are partially informed by reference composition data from 2010/11 for LA-collected commercial waste (the 2018/19 update covered residual waste only). There are two main issues associated with this; the composition of commercial waste may have changed since 2010/11, and the composition of LA-collected commercial waste may be different to overall municipal commercial waste (LA and non-LA collected).
- It was only possible to present commercial recycling composition results at a primary category level. This is because much of the analysis was based on the Defra C&I arisings data<sup>5</sup>, which was itself categorised at a high level. There was no available data that provides a reasonable rationale for performing further disaggregation of the recycling arisings data into detailed categories. Due to the limitations in categorisation available for commercial recycling, estimates of composition for municipal recycling (household plus commercial) and total municipal arisings (residual plus recycling, household plus commercial) can only be provided at the primary category level.
- Considerably more detailed categories are available for municipal residual waste, because the 2018/19 analysis of commercial residual waste<sup>8</sup> categorised the sampled material in sufficient detail in order for arisings to be estimated in line with the full category list used in the 2017 household estimates<sup>9</sup>.

<sup>6</sup> WRAP, 2019, National Municipal Commercial Waste Composition – England 2017,.

<sup>7</sup> [https://consult.defra.gov.uk/environmental-quality/consultation-on-consistency-in-household-and-busin/supporting\\_documents/recycleconsistencyconsultia.pdf](https://consult.defra.gov.uk/environmental-quality/consultation-on-consistency-in-household-and-busin/supporting_documents/recycleconsistencyconsultia.pdf)

<sup>8</sup> Compositional analysis of LA collected and non-LA collected non-household municipal waste (England)

<sup>9</sup> WRAP, 2019, National Household Waste Composition 2017,.



## 3.0 Results

Compositional estimates for municipal waste arisings from both households and commercial sector businesses in England in 2017 are presented in this section.

While it is possible to present data for the municipal residual waste streams (household and commercial) at a detailed category list level, data limitations in the commercial analysis mean that it is only possible to present commercial recycling composition (and therefore, also overall municipal composition) at a primary category level.

### 3.1 Total Municipal Waste Composition

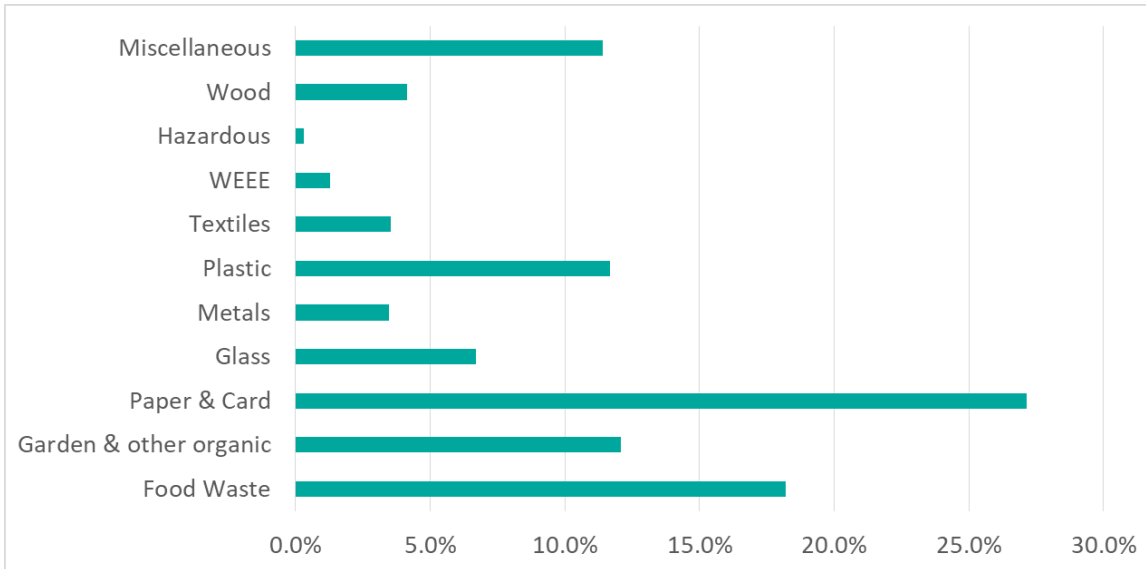
The composition of overall municipal waste collected in England in 2017 is shown in Table 2 and in Figure 1. Organic waste (including food waste) accounts for the largest share of municipal waste in England at 30% of all arisings. Paper and card together account for 27% of municipal arisings.

Table 2: National waste composition estimates for England, all municipal waste and recycling, 2017 (tonnes)

Waste Stream →	HOUSEHOLD TOTAL	COMMERCIAL TOTAL	MUNICIPAL TOTAL	Composition
Metric → Material Category ↓	tpa	tpa	tpa	%
Food Waste	4,386,331	3,295,025	7,681,355	18.2%
Garden & other organic	4,643,585	450,894	5,094,479	12.1%
Paper & Card	4,200,837	7,243,053	11,443,890	27.1%
Glass	1,621,034	1,210,521	2,831,555	6.7%
Metals	893,631	573,021	1,466,652	3.5%
Plastic	2,143,984	2,773,739	4,917,723	11.7%
Textiles	1,107,958	379,794	1,487,753	3.5%
WEEE	424,637	120,908	545,545	1.3%
Hazardous	89,358	47,378	136,736	0.3%
Wood	903,175	847,678	1,750,853	4.2%
Miscellaneous	3,378,342	1,434,888	4,813,231	11.4%
<b>TOTAL</b>	<b>23,792,872</b>	<b>18,376,899</b>	<b>42,169,771</b>	<b>100.0%</b>

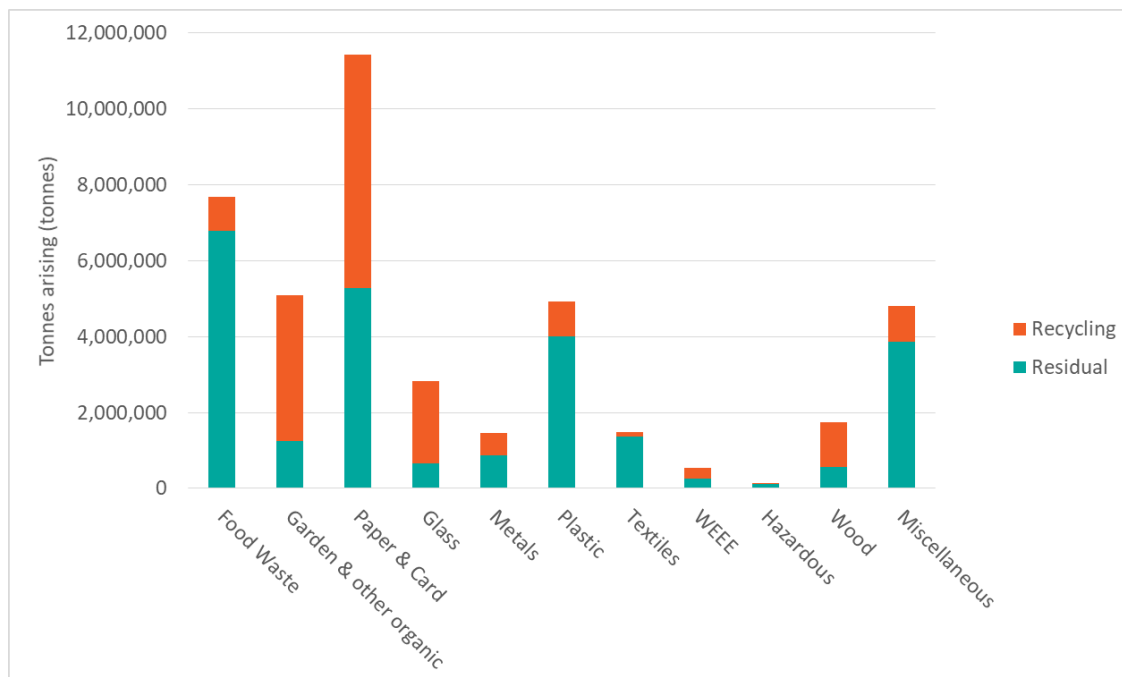
## Municipal Waste Composition – England 2017

Figure 1: Composition of municipal waste in England 2017, (percentage of total arisings)



Total municipal waste arisings for residual waste and recycling (for more details, refer to Sections 3.2 and 3.3 respectively) are illustrated in Figure 2. The largest arising is for Paper & Card, with an estimated capture rate for recycling of 54%. The next highest arising is for food waste, with an estimated capture rate of 12%.

Figure 2: Municipal waste residual and recycling – England, 2017 (tonnes)



## 3.2 Municipal Residual Waste Composition

The composition of residual municipal waste collected in England, 2017 is presented in Table 3. This uses the same category list as applied for the 2017 household waste composition estimates<sup>10</sup>.

Table 3: National waste composition estimates for England, all municipal residual waste, 2017 (tonnes)

Waste Stream →	HOUSEHOLD RESIDUAL TOTAL	COMMERCIAL MUNICIPAL RESIDUAL TOTAL	MUNICIPAL RESIDUAL TOTAL	Composition
Metric →	tpa	tpa	tpa	%
Category Tier →	All	All	All	All
Material Category ↓				
<b>Food Waste</b>	<b>3,852,077</b>	<b>2,928,375</b>	<b>6,780,452</b>	<b>27.0%</b>
Avoidable food waste	2,706,736	1,845,494	4,552,231	18.1%
Unavoidable food waste	1,001,016	1,082,881	2,083,897	8.3%
Consumable liquids, fats & oils	144,324	0	144,324	0.6%
<b>Garden waste</b>	<b>557,208</b>	<b>118,053</b>	<b>675,261</b>	<b>2.7%</b>
<b>Other organic</b>	<b>509,145</b>	<b>75,908</b>	<b>585,053</b>	<b>2.3%</b>
Pet excrement and bedding	507,805	75,702	583,508	2.3%
Other organic (tier 3)	1,340	205	1,545	0.0%
<b>Paper</b>	<b>1,173,088</b>	<b>2,535,152</b>	<b>3,708,240</b>	<b>14.8%</b>
<i>2nd tier: Recyclable paper</i>	<i>541,475</i>	<i>946,500</i>	<i>1,487,975</i>	<i>5.9%</i>
Packaging paper	39,368	87,888	127,256	0.5%
News, mags, brochures, catalogues & directories	353,342	594,446	947,788	3.8%
Other recyclable paper	148,765	264,167	412,932	1.6%
<i>2nd tier: Non-recyclable paper</i>	<i>631,613</i>	<i>1,588,652</i>	<i>2,220,265</i>	<i>8.9%</i>
Non-recyclable paper	631,613	1,588,652	2,220,265	8.9%
<b>Card</b>	<b>483,808</b>	<b>1,093,104</b>	<b>1,576,912</b>	<b>6.3%</b>
Thin card	253,272	275,827	529,099	2.1%
Thick and corrugated card	109,908	706,990	816,898	3.3%
Cartons (including Tetrapak)	33,225	45,114	78,340	0.3%
Other card	87,403	65,173	152,576	0.6%
<b>Glass</b>	<b>384,066</b>	<b>272,420</b>	<b>656,486</b>	<b>2.6%</b>
Packaging glass	333,665	234,560	568,225	2.3%
Non-packaging glass	50,401	37,860	88,261	0.4%
<b>Ferrous metals</b>	<b>243,437</b>	<b>351,625</b>	<b>595,062</b>	<b>2.4%</b>
<i>2nd tier: Ferrous cans, all</i>	<i>88,588</i>	<i>124,413</i>	<i>213,001</i>	<i>0.8%</i>
Ferrous drink cans	9,890	12,594	22,484	0.1%
Ferrous food cans	78,699	111,818	190,517	0.8%
<i>2nd tier: Ferrous non-cans</i>	<i>154,848</i>	<i>227,213</i>	<i>382,061</i>	<i>1.5%</i>
Ferrous aerosols	16,295	9,140	25,435	0.1%
Other ferrous packaging	14,254	23,863	38,117	0.2%
Other ferrous non-packaging	124,299	194,210	318,510	1.3%

<sup>10</sup> WRAP, 2019, National Household Waste Composition 2017

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Waste Stream →	HOUSEHOLD RESIDUAL TOTAL	COMMERCIAL MUNICIPAL RESIDUAL TOTAL	MUNICIPAL RESIDUAL TOTAL	Composition
Metric →	tpa	tpa	tpa	%
Category Tier →	All	All	All	All
Material Category ↓				
<b>Non-ferrous metals</b>	<b>152,931</b>	<b>133,728</b>	<b>286,659</b>	<b>1.1%</b>
<i>2nd tier: Non-ferrous cans, all</i>	49,969	56,625	106,594	0.4%
Non-ferrous drink cans	42,242	48,716	90,958	0.4%
Non-ferrous food cans	7,727	7,908	15,635	0.1%
<i>2nd tier: Non-ferrous non-cans</i>	102,962	77,103	180,065	0.7%
Non-ferrous aerosols	14,756	5,804	20,560	0.1%
Aluminium foil	73,363	45,238	118,601	0.5%
Other non-ferrous	14,843	26,061	40,904	0.2%
<b>Dense plastic</b>	<b>952,631</b>	<b>1,012,689</b>	<b>1,965,319</b>	<b>7.8%</b>
<i>2nd tier: Plastic bottles</i>	167,435	278,358	445,793	1.8%
PET bottles	89,259	150,407	239,667	1.0%
HDPE bottles	58,448	100,640	159,088	0.6%
Other plastic bottles	19,727	27,311	47,038	0.2%
<i>2nd tier: Dense plastic non-bottles</i>	785,196	734,331	1,519,527	6.1%
Pots, tubs & trays	258,807	328,890	587,698	2.3%
Other dense plastic packaging	111,282	123,102	234,384	0.9%
Other dense plastic non-packaging	376,429	282,338	658,767	2.6%
Polystyrene	38,678	0	38,678	0.2%
<b>Plastic film</b>	<b>752,317</b>	<b>1,300,873</b>	<b>2,053,190</b>	<b>8.2%</b>
Carrier bags	98,926	65,020	163,945	0.7%
Other packaging plastic film	427,307	858,499	1,285,807	5.1%
Non-packaging plastic film	226,084	377,354	603,438	2.4%
<b>Textiles</b>	<b>992,597</b>	<b>379,767</b>	<b>1,372,364</b>	<b>5.5%</b>
<i>2nd tier: Clothing, shoes, bags &amp; belts</i>	445,528	169,800	615,328	2.5%
Clothing	280,609	111,962	392,571	1.6%
Shoes, bags & belts	164,919	57,838	222,757	0.9%
<i>2nd tier: all non-clothing textiles</i>	547,068	209,967	757,036	3.0%
Carpet & underlay	214,816	113,286	328,102	1.3%
Other non-clothing textiles	332,252	96,681	428,933	1.7%
<b>WEEE</b>	<b>159,219</b>	<b>108,796</b>	<b>268,015</b>	<b>1.1%</b>
Large WEEE	69,221	43,477	112,698	0.4%
Small WEEE	89,998	65,319	155,317	0.6%
<b>Hazardous</b>	<b>69,056</b>	<b>47,346</b>	<b>116,401</b>	<b>0.5%</b>
Household batteries	12,047	4,561	16,608	0.1%
Paints and varnishes	28,862	4,865	33,727	0.1%
Other household hazardous waste	28,147	37,920	66,066	0.3%
<b>Wood</b>	<b>188,487</b>	<b>388,038</b>	<b>576,525</b>	<b>2.3%</b>
Treated wood	110,562	253,301	363,863	1.5%
Non-treated wood	77,925	134,737	212,662	0.8%
<b>Misc combustible</b>	<b>1,755,396</b>	<b>578,382</b>	<b>2,333,778</b>	<b>9.3%</b>
AHPs	872,201	128,232	1,000,434	4.0%
Other sanitary	32,231	0	32,231	0.1%
Furniture	342,871	46,941	389,812	1.6%
Mattresses	132,428	11,551	143,979	0.6%
Other misc combustible	375,666	391,657	767,323	3.1%
<b>Misc non-combustible</b>	<b>639,212</b>	<b>270,142</b>	<b>909,355</b>	<b>3.6%</b>
Soil	94,275	51,151	145,427	0.6%
Rubble	201,973	0	201,973	0.8%
Plasterboard	30,618	0	30,618	0.1%
Other misc non-combustible	312,345	218,991	531,336	2.1%
<b>Fines</b>	<b>212,373</b>	<b>350,585</b>	<b>562,958</b>	<b>2.2%</b>
<b>Other wastes</b>	<b>59,756</b>	<b>0</b>	<b>59,756</b>	<b>0.2%</b>
<b>TOTAL</b>	<b>13,136,803</b>	<b>11,944,984</b>	<b>25,081,787</b>	<b>100.0%</b>

### 3.3 Municipal Recycling Composition

The composition of municipal waste collected for recycling in England, 2017 is presented in Table 4.

Table 4: National waste composition estimates for England, all municipal recycling, 2017 (tonnes)

Waste Stream →	HOUSEHOLD RECYCLING TOTAL	COMMERCIAL RECYCLING TOTAL	MUNICIPAL RECYCLING TOTAL	Composition
Metric →	tpa	tpa	tpa	%
Material Category ↓				
Food Waste	534,254	366,650	900,903	5.3%
Garden waste and other organic	3,577,232	256,933	3,834,165	22.4%
Paper & Card	2,543,941	3,614,796	6,158,737	36.0%
Glass	1,236,968	938,101	2,175,069	12.7%
Metals	497,263	87,668	584,931	3.4%
Plastic	439,036	460,177	899,214	5.3%
Textiles	115,361	27	115,389	0.7%
WEEE	265,417	12,112	277,530	1.6%
Hazardous	20,302	33	20,335	0.1%
Wood	714,688	459,639	1,174,328	6.9%
Miscellaneous	711,605	235,779	947,384	5.5%
<b>TOTAL</b>	<b>10,656,069</b>	<b>6,431,914</b>	<b>17,087,984</b>	<b>100.0%</b>

## 4.0 Conclusion

This report presents the composition and arisings estimates for materials in municipal waste produced by both commercial sector businesses and households in England, for the calendar year 2017.

Although the results are based on the best available data at the time of writing, there are a number of limitations associated with the commercial analysis as outlined fully in the separate commercial municipal waste report *National Municipal Commercial Waste Composition – England 2017 (WRAP, 2019)*<sup>11</sup>. As such, all results including commercial data should be treated as indicative only and interpreted with caution.

<sup>11</sup> WRAP, 2019, National Municipal Commercial Waste Composition – England 2017.

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Our mission is to accelerate the move to a sustainable resource-efficient economy through re-inventing how we design, produce and sell products; re-thinking how we use and consume products; and re-defining what is possible through re-use and recycling.

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