



# Asphalt Roofing Recycling Committee

Measurement Working Group Proposal

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## **ARMA Statement on Recycling Asphalt Roofing Materials**

*The industry goals are to reduce landfill disposal of asphalt-based roofing materials to 50% by 2035 and to approach 0% by 2050.*

*To accomplish these goals, ARMA will foster and promote responsible, economically feasible, and sustainable circular economy options to recycle asphalt-based roofing materials and enhance the long-term viability of asphalt roofing as the preferred roofing material.*

## Measurement Working Group Objective

The Measurement Working Group is to provide means and methods to estimate quantities diverted and not diverted from landfill.

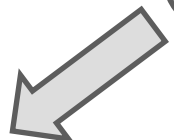
## Measurement Process Assumptions

Assumptions flow from the ARMA statement on recycling:

1. Intended to address all asphalt roofing materials.
2. Intended to encompass all waste streams.
3. Suitable for use through at least 2050.
4. Report results as percentage diverted.
5. Report on periodic (e.g., annual) basis.

## Proposed Methodology

$$\text{Percent Diverted} = \frac{\text{Waste Diverted (tons)}}{\text{Total Waste (tons)}}$$

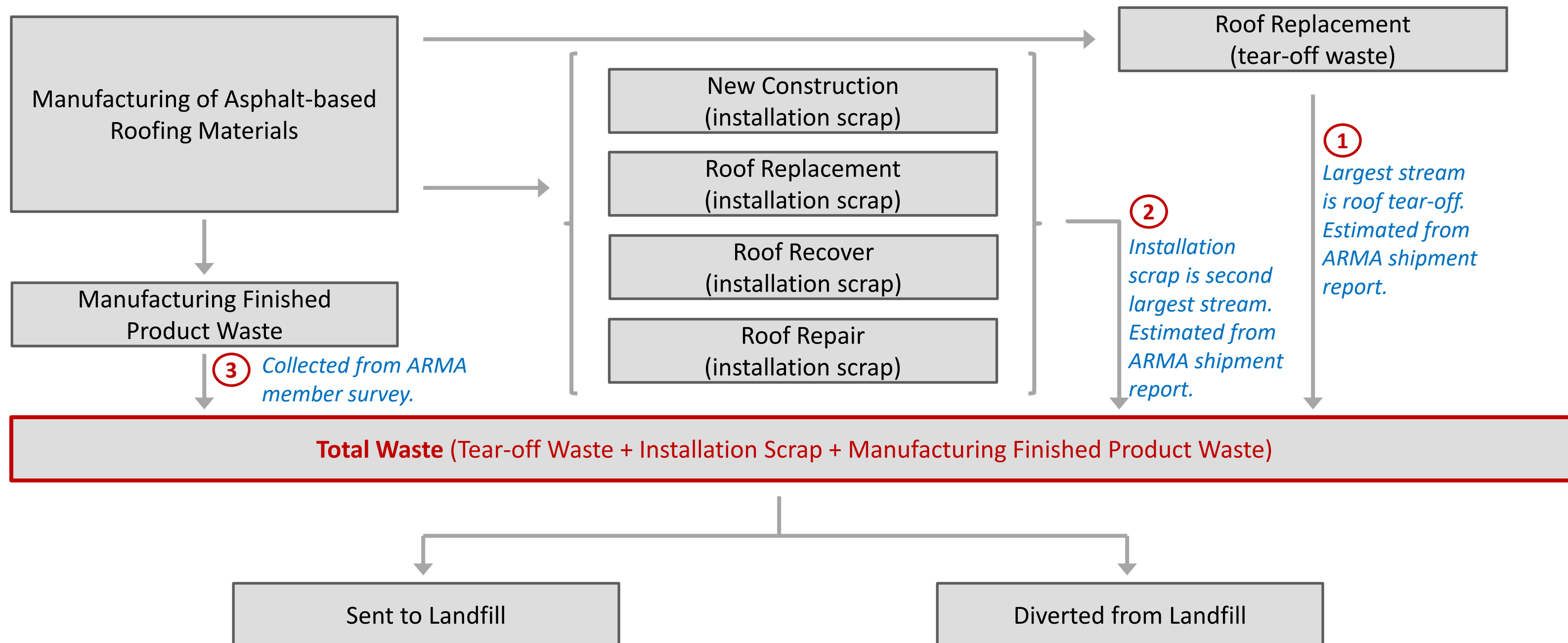


Cumulation of  
Validated Sources

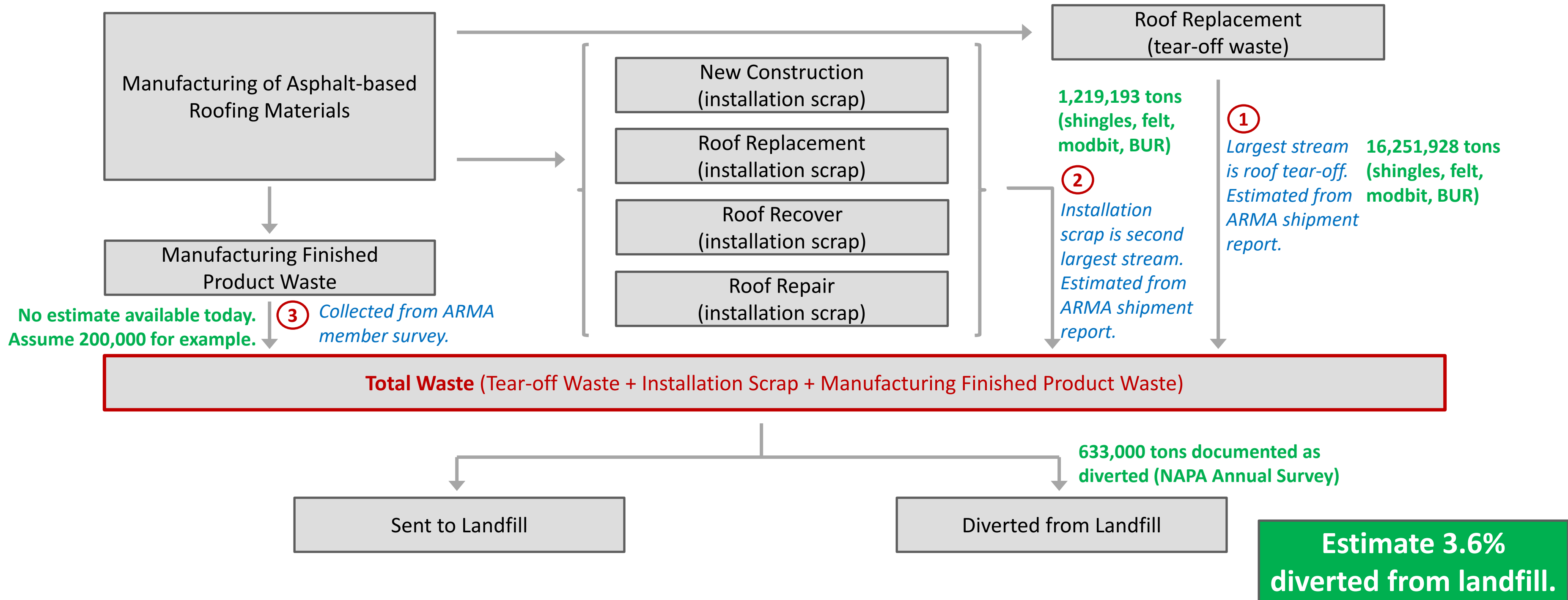


Estimated from  
ARMA Shipment  
Report Data

# Estimating Total Waste










# Estimating Total Waste



# Estimating Quantity Diverted

Compilation of Waste Streams Validated as Diverted from Landfill

<u>Recycled End Use</u>	<u>Source</u>	<u>Status</u>	<u>Existing or Potential Method</u>
Asphalt Pavement	NAPA Annual Survey	Available 	Mix-plant and DOT survey
Aggregate for Paving	NAPA Annual Survey	Available 	Mix-plant and DOT survey
Reuse in AR Manufacturing	ARMA Member Companies	To be developed 	Survey
Component Breakdown	Practicing Companies	To be developed 	Survey, public reporting
Dust Suppression	Practicing Companies	To be developed 	Survey via CDRA
Waste to Energy	Practicing Companies	To be developed 	Survey, public reporting
Other/New Uses	TBD	To be developed 	TBD

*Ongoing effort of ARMA working groups and third-parties will be creation of methods to collect reliable data on diversion streams. Prevention of double-counting will be a critical element of this work.*



## Comparison of ARMA Estimate to EPA Estimate

### EPA apportions an estimate of total C&D waste by material type.

- EPA estimate is based on U.S. asphalt shingles only.

### ARMA estimates from industry shipment report data.

- Method includes U.S. and Canada asphalt shingles; also includes U.S. felt, modified bitumen, and BUR.

### ARMA Estimate with ONLY U.S. Asphalt Shingles for Direct Comparison to EPA Estimate

EPA 2018 estimate for asphalt shingles:	15.1 million tons
	1.2 million tons waste during construction
	13.9 million tons demolition debris (i.e., tear-off)
ARMA 2018 estimate for U.S. <u>asphalt shingles</u> :	12.8 million tons
	0.9 million tons waste during construction
	11.9 million tons tear-off waste

# Communication Strategy Flows from Methodology

## ARMA Estimates Asphalt Roofing Waste Diverted from Landfill

**Forest Hill, MD** (December 20, 20xx) – The Asphalt Roofing Manufacturers Association (ARMA) estimates that approximately \_\_\_\_\_ tons of asphalt roofing waste was diverted from disposal in U.S. and Canadian landfills during 20xx, which is approximately \_\_\_\_% of the estimated total roofing waste generated during 20xx. ARMA’s waste estimate incorporates all asphalt roofing types for the United States and asphalt shingles for Canada.

“ARMA issued an aspirational statement in May 2022 which expressed our intent of our member companies to work toward diverting 50% of asphalt roofing waste from landfill by 2035,” stated Reed Hitchcock, ARMA Executive Vice President. “This progress report indicates \_\_\_\_\_.”

The reported tons and percentage diverted are based on estimates from a measurement method developed by ARMA which uses data from ARMA product shipment reports to estimate total waste generated annually and data accumulated from known waste diversion streams to estimate the waste diverted from landfill. The diversion values are based solely on shipments reported by ARMA member companies, which represent the majority but not the entirety of the asphalt roofing industry.

## Methodology Strengths

- ✓ Uses industry specific primary data to estimate total waste.
- ✓ Includes only validated estimates of diverted quantities.
- ✓ Intended to provide a conservative estimate of diversion percentage.
- ✓ Flexible to permit continuous improvement.

## Recommendations and Requests

- Alignment on proposed methodology
- Support to modify Shipment Report to include reporting in tons and squares.
- Scope 3rd party support to obtain reliable reroofing vs. new construction annual estimate.
- Scope 3rd part support to develop and collect data on other diversion sources.
- Target first public report in December 2025 to allow inclusion of 2024 NAPA annual survey data.



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# Appendix

## Assumptions and Inputs

**ROOF REPLACEMENT PROJECTS** yield one-to-one weight of removed and installed materials.

**REROOFING RATE** assumption based on values from 2015-2016 NRCA Market Survey.

### **CONVERSION FACTORS (Squares to tons)**

Required for all product types on ARMA shipment report, except saturated felt, which is collected in tons. Estimated conversion rates consider industry-average EPDs and third-party product standard minimums, and industry knowledge.

**SCRAP RATE.** Based on values in ARMA Residential Roofing Manual (for shingles) and values in industry average EPDs (for low-slope products).