

California Waste Tire Market Report: 2023

Draft findings
November 18, 2024



Outline

1. The bottom line
2. Market trends by category
3. Recycling outlook

**The 2023
bottom line:**

**Recycling
continues amid
changing
conditions**



The 2023 Summary

- Decreased total amount of managed tires from previous year, 2022 601K tons down to 570K tons in 2023
- Recycling rate relatively unchanged at 35.1% (although tonnage decreased)
- Economic changes from high interest rates, due to inflation concern, and a perceived 2023 recession risk
- Continued low unemployment, real wage increases, resulting in staffing challenges
- TDF export increased
- Decreased landfill disposal

2023 California Waste Tire Flows

Total Managed: 569,684 Tons (57M PTE*)

Recycling

35.1% of total
199,889 tons

- Other Recycling 2.3%
- Crumb/Ground Rubber 13.7%
- Civil Engineering (TDA) 1.5%
- Used Tires 7.8%
- Retreads 9.8%

* Passenger Tire Equivalents

Disposal-Related

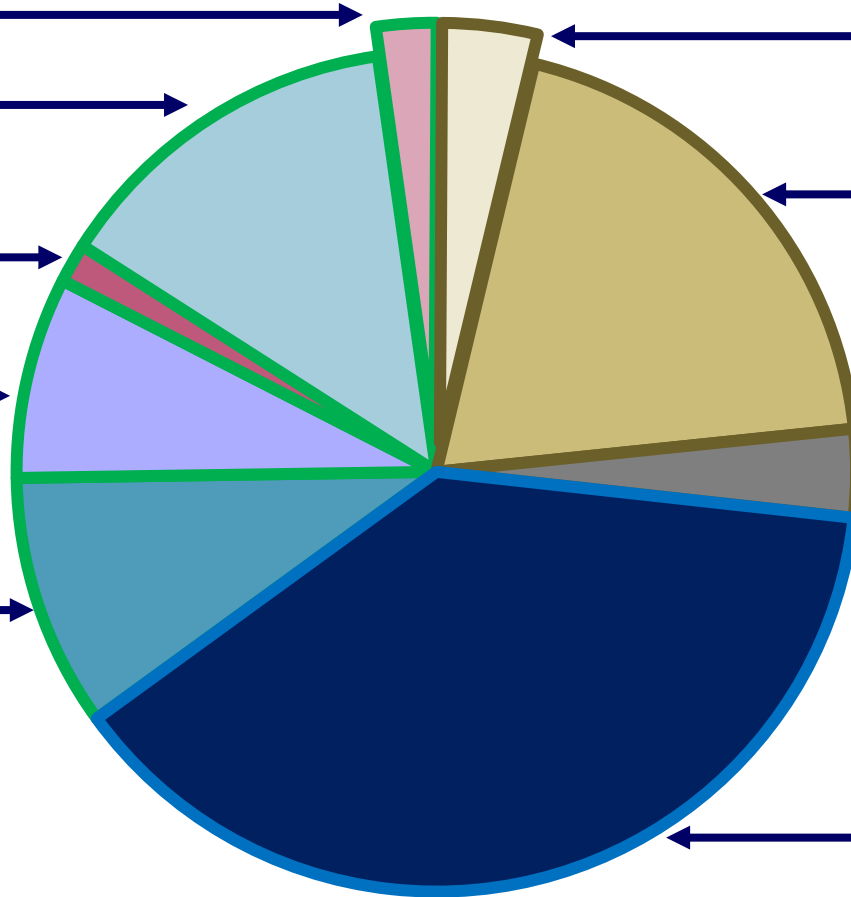
26.7% of total
151,886 tons

- Tire Derived Fuel (In-State) 3.7%
- Tire Derived Fuel (Export) 19.6%
- Alternative Daily Cover 3.4%

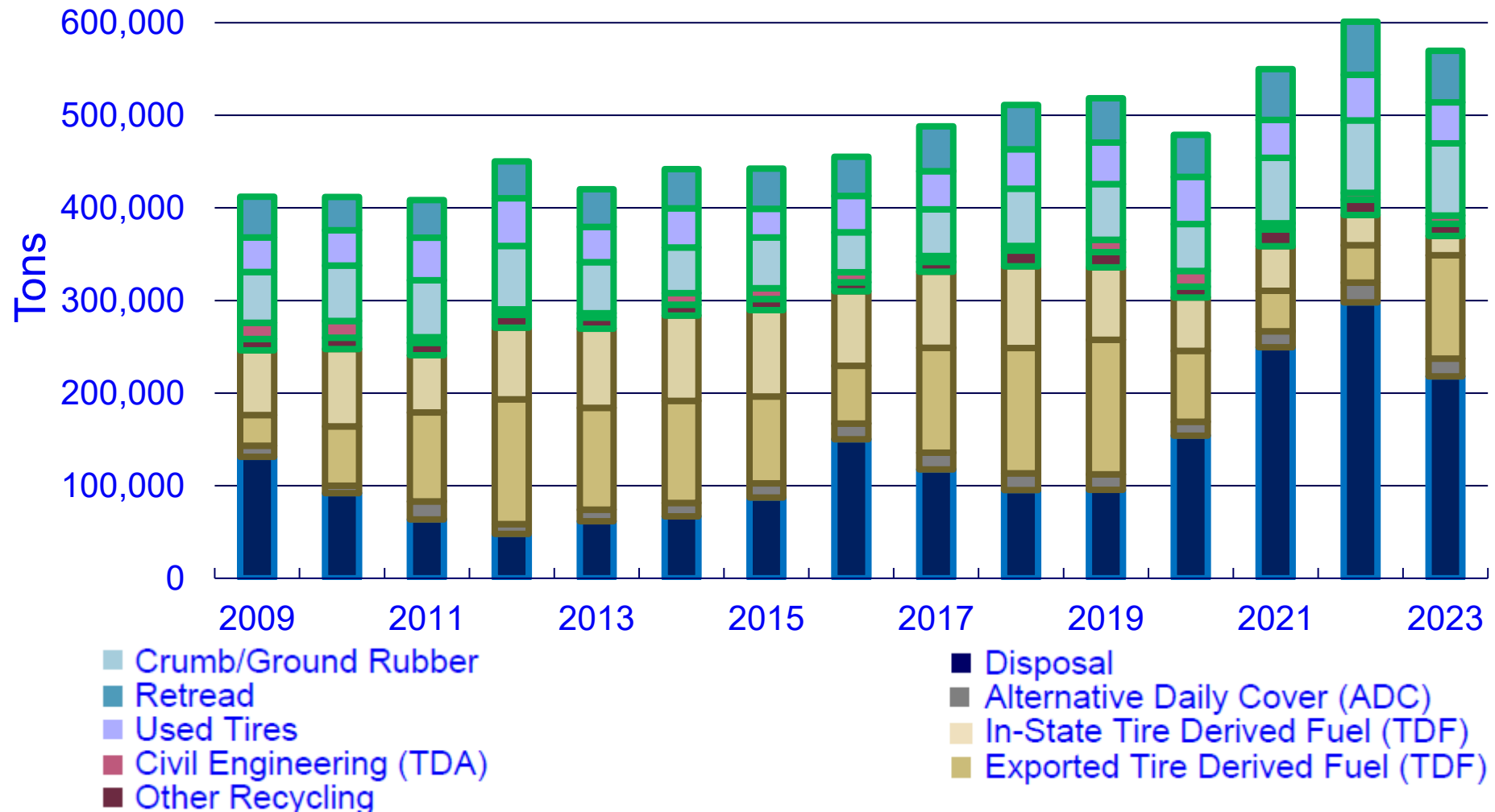
Disposal

38.2% of total
217,909 tons

- Landfill Disposal 38.2%



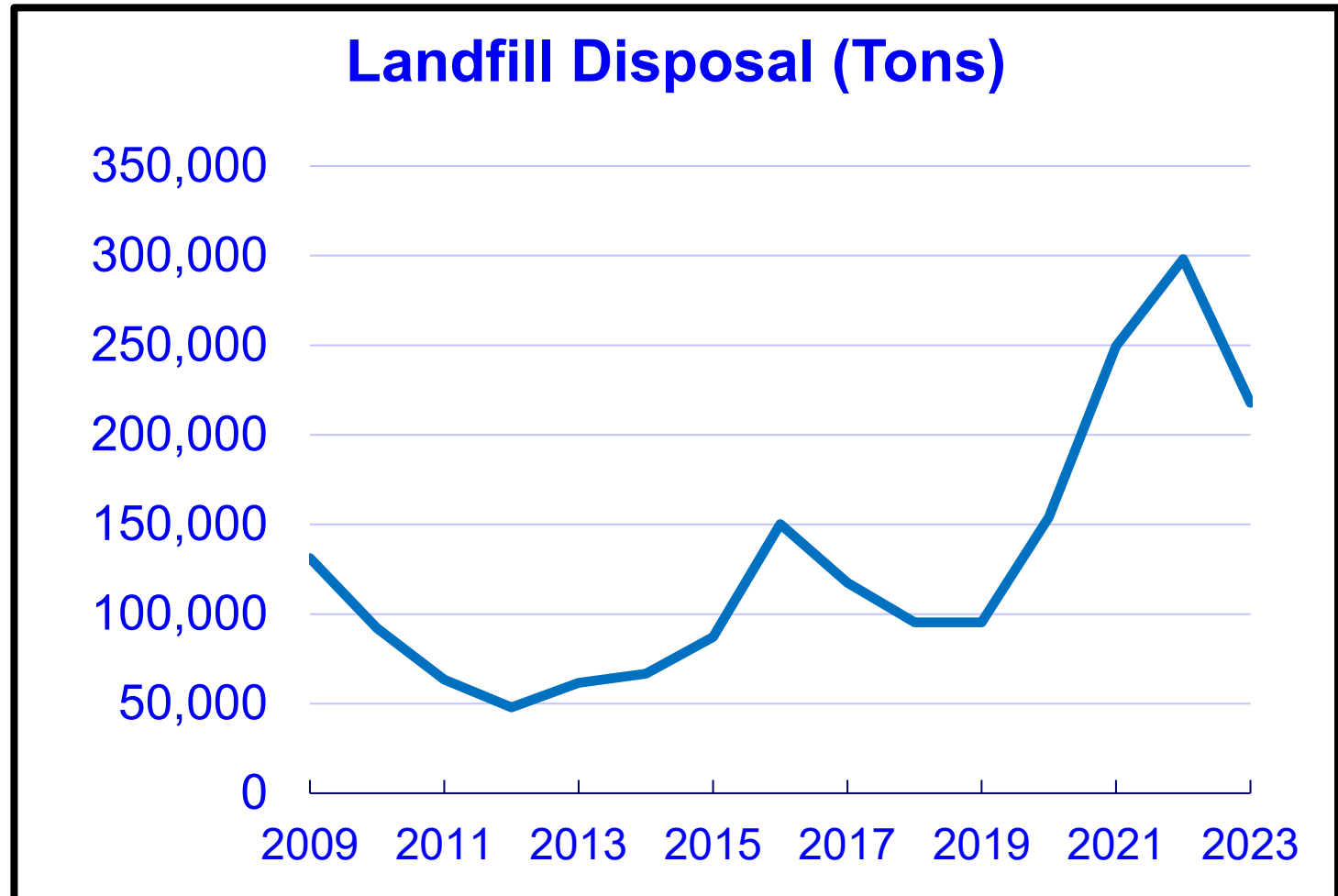
15-Year Trend by Market Segment



2. Market Trends by Category

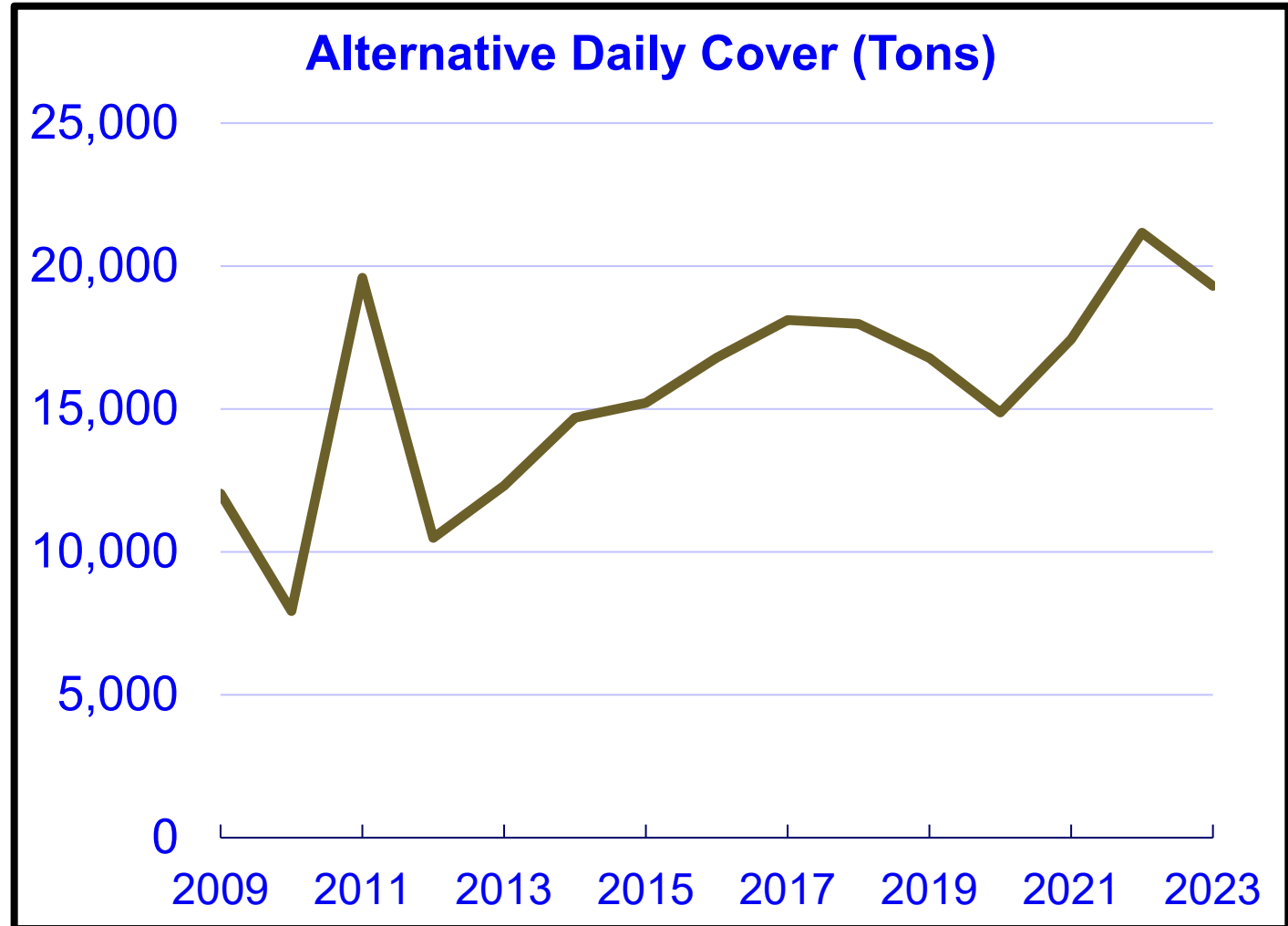
Disposal (Landfill)

- 217,909 tons, 38.2% of total
- Decrease of 26.9% from 2022
- Exports increased to India and Japan
- 2024 trend: continued decrease



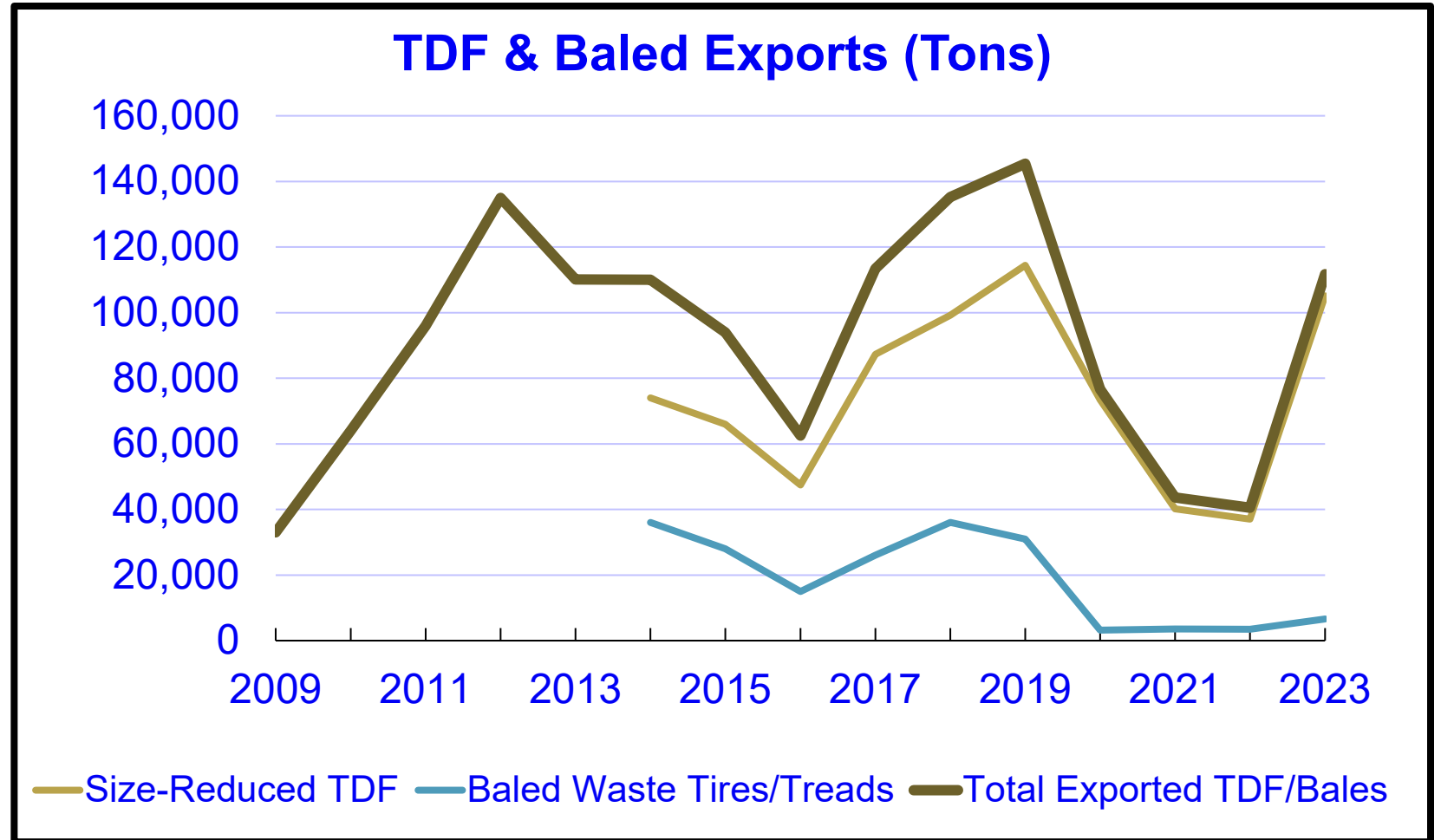
Alternative Daily Cover (ADC)

- 19,307 Tons, 3.4% of total
- Decrease of 8.8% from 2022
- 2 landfills use ADC
- 2024 trend: steady relationship to landfill operations



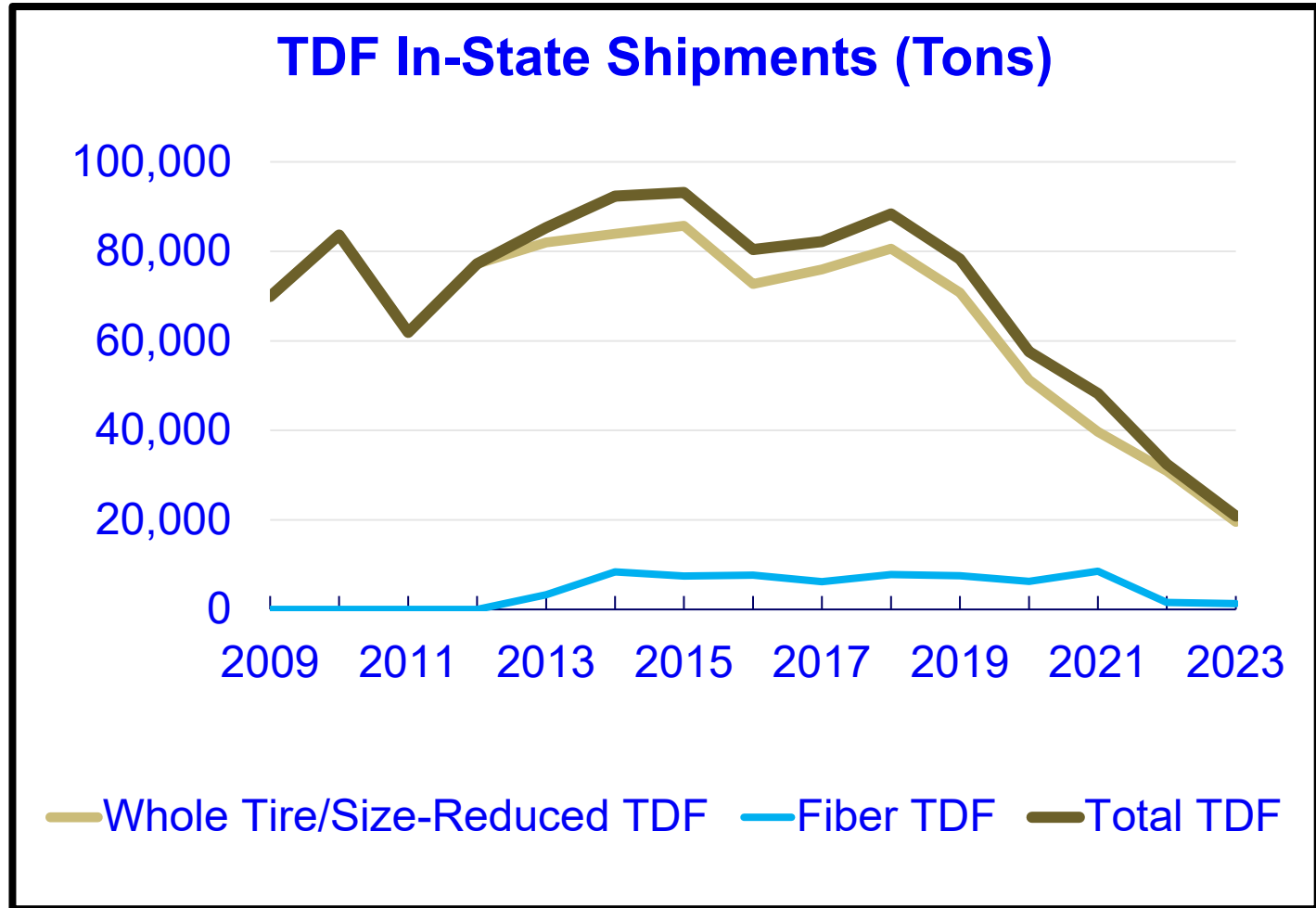
Exported Tire Derived Fuel (TDF) & Baled Waste Tires/Treads

- 111,721 tons, 19.6% of total
- Increase of 176% from 2022
- Used in cement kilns, power plants, pulp and paper and chemical plants in select countries
- Better economics for producers in 2023
- 2024 Trend: export demand growing



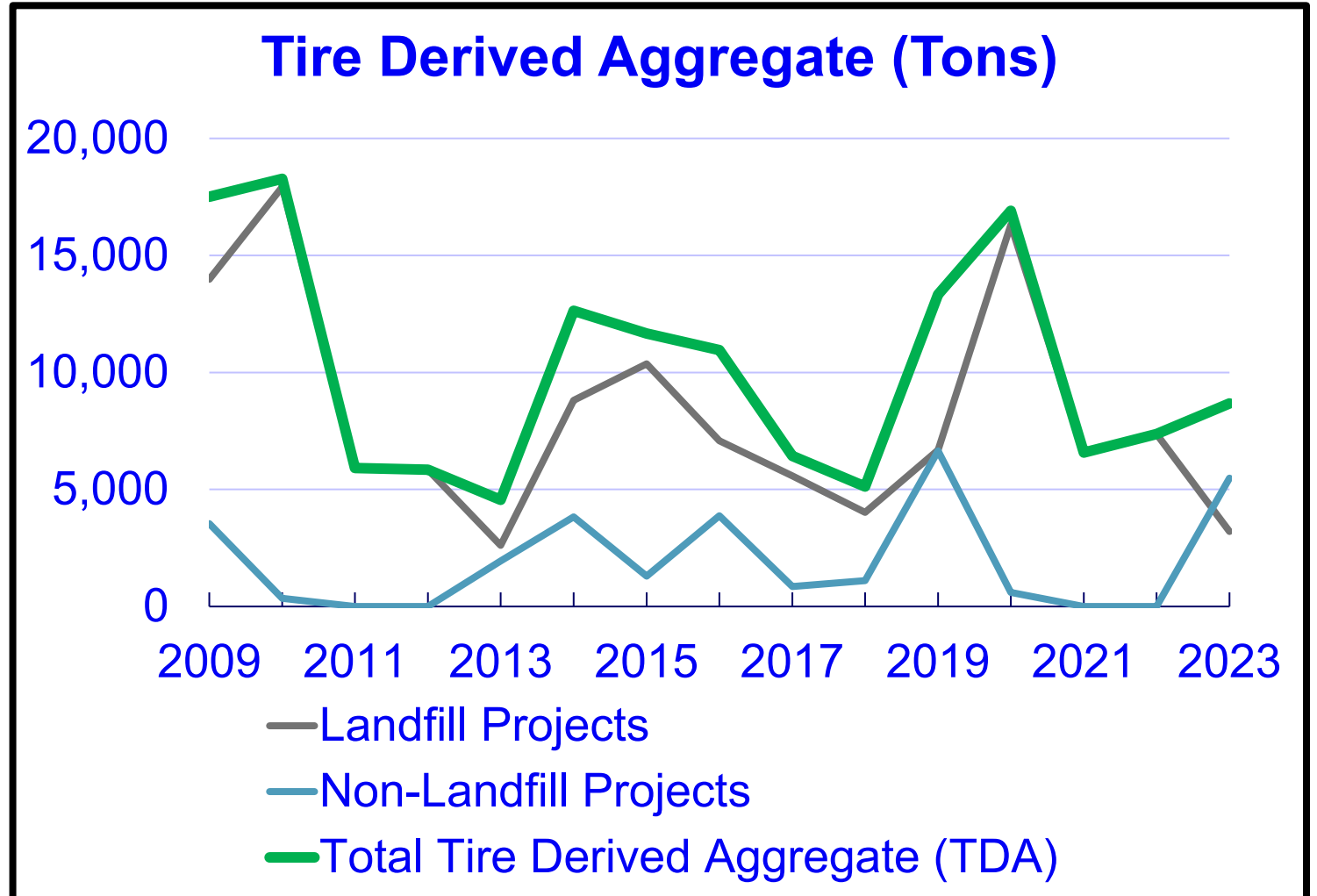
In-State Tire Derived Fuel (TDF)

- 20,858 tons, 3.7% of total
- Decrease of 35.7% from 2022
- Includes 1,300 tons fiber
- Continued impact from 2022 changed cement kiln fuel specifications
- 2024 trend: stable or continued decrease



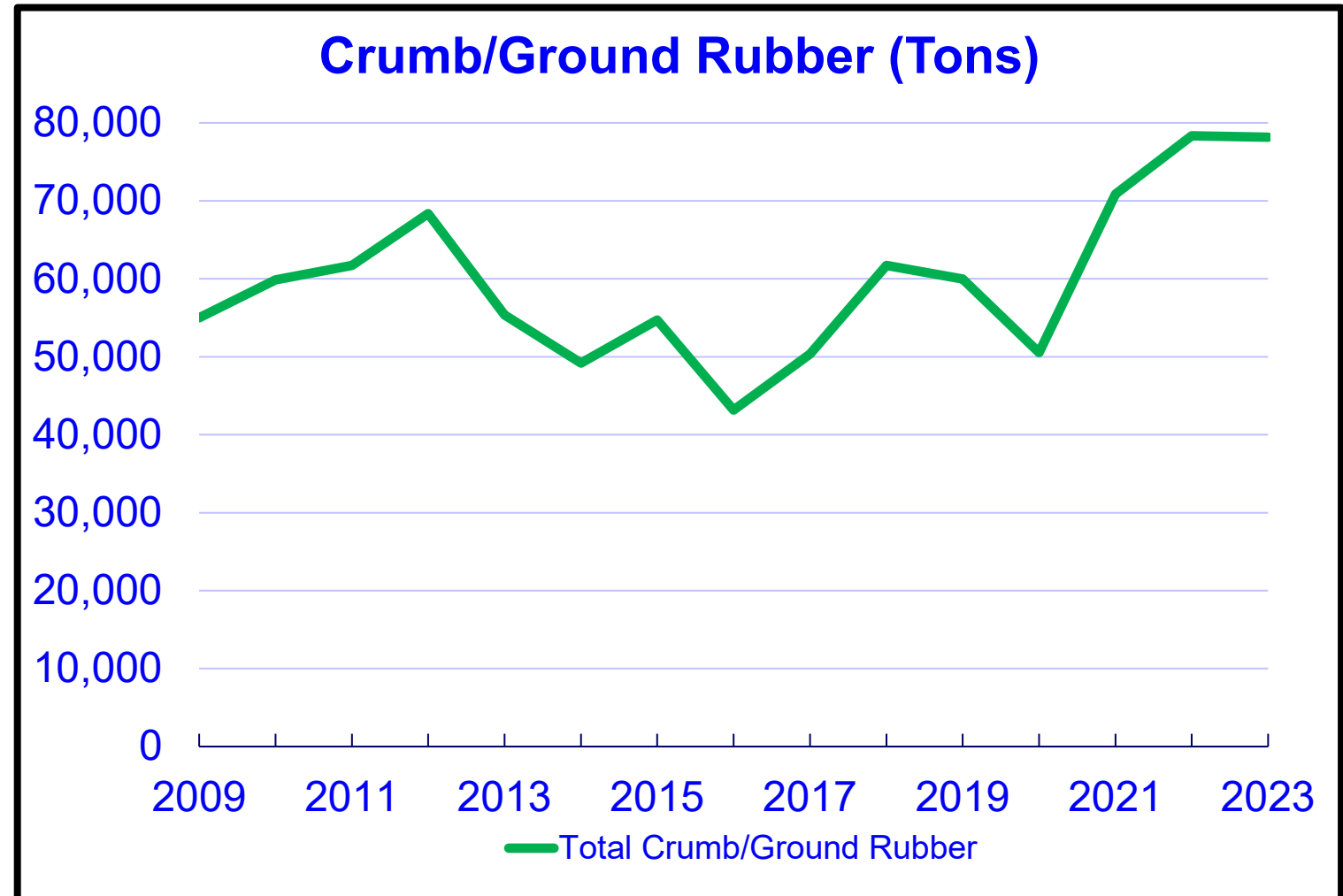
Civil Engineering (Tire Derived Aggregate)

- 8,682 Tons, 1.5% of total
- Increase of 17.8% from 2022
- ~3,200 tons on landfill projects
- LA Metro grant projects, 5,482 tons
- Environmental concerns have stunted use
- Grant solicitation published, \$750K/year allocated



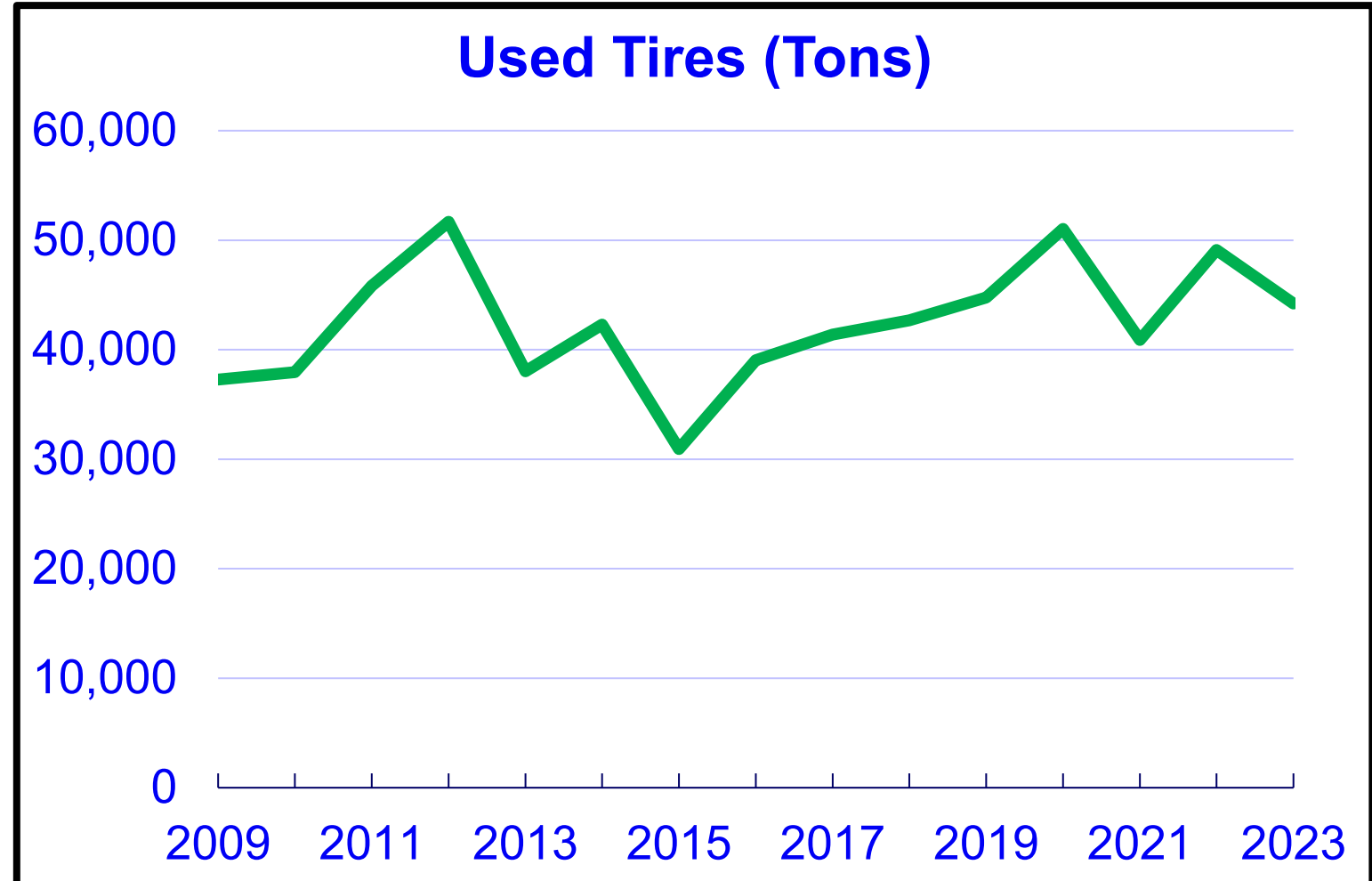
Crumb/Ground Rubber

- 78,159 tons, 13.7% of total
- Approximately the same tonnage as 2022
- Includes paving, molded/other, turf infill, ground rubber
- 2024 trend: stable, market changes on the horizon



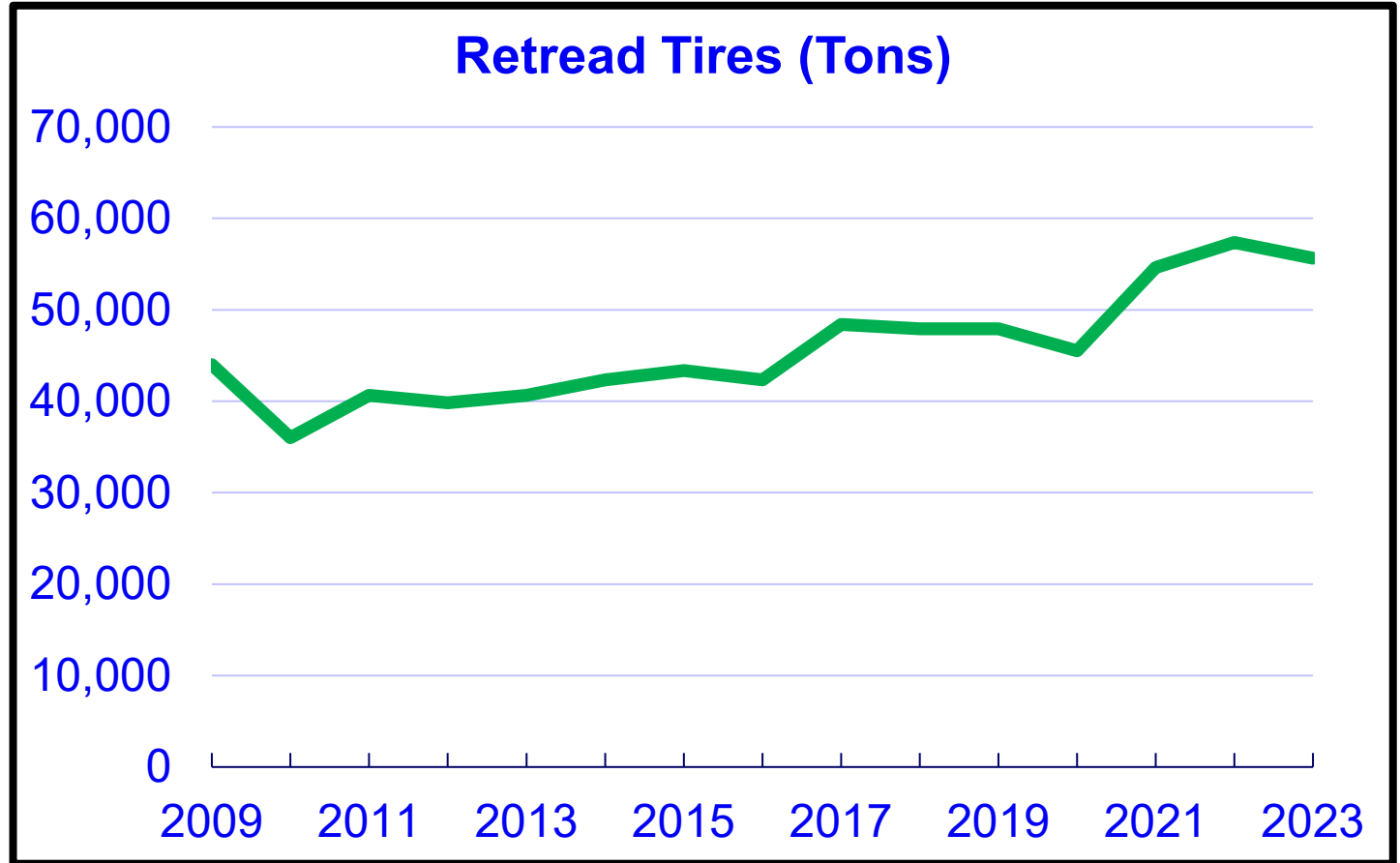
Used Tires

- 44,203 tons, 7.8% of total
- Decrease of 10% from 2022
- Used tires sold in CA tire shops
- Also exported (mainly to Mexico)



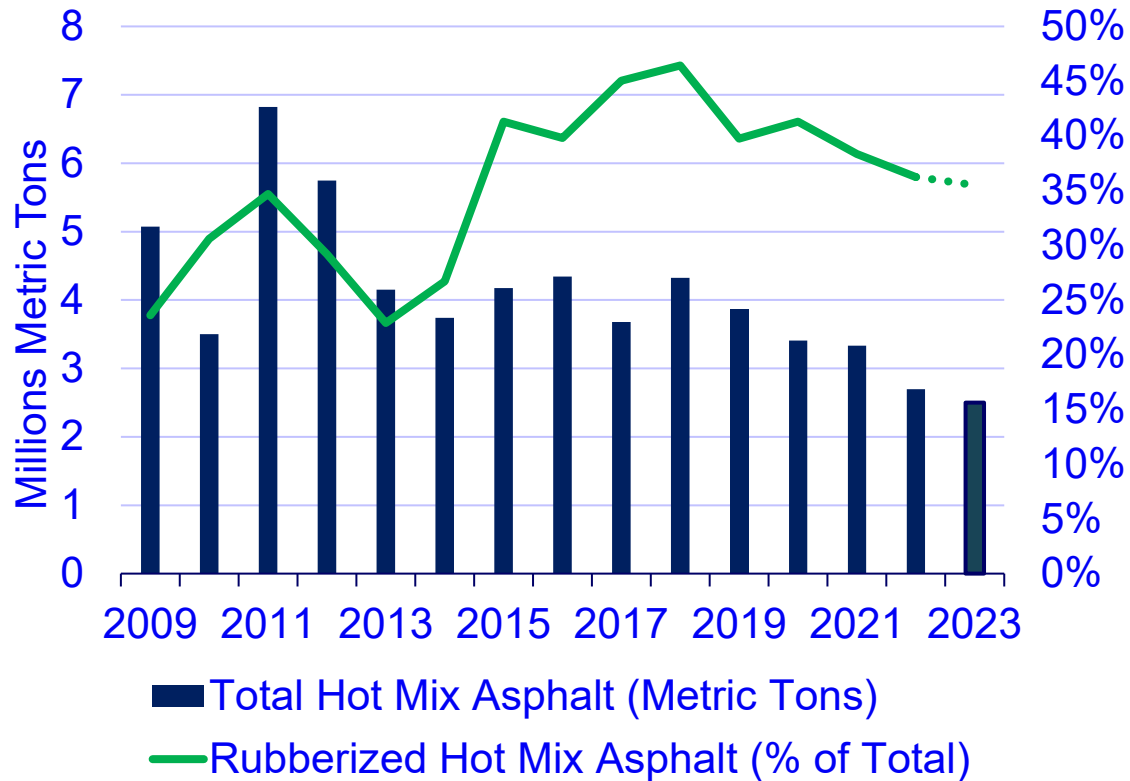
Retreads

- 55,645 tons, 9.8% of total
- Decrease of 3% from 2022
- Competing with inexpensive import tires
- 2024 trend: slight increase reported by retreaders, based on trade and consumer value

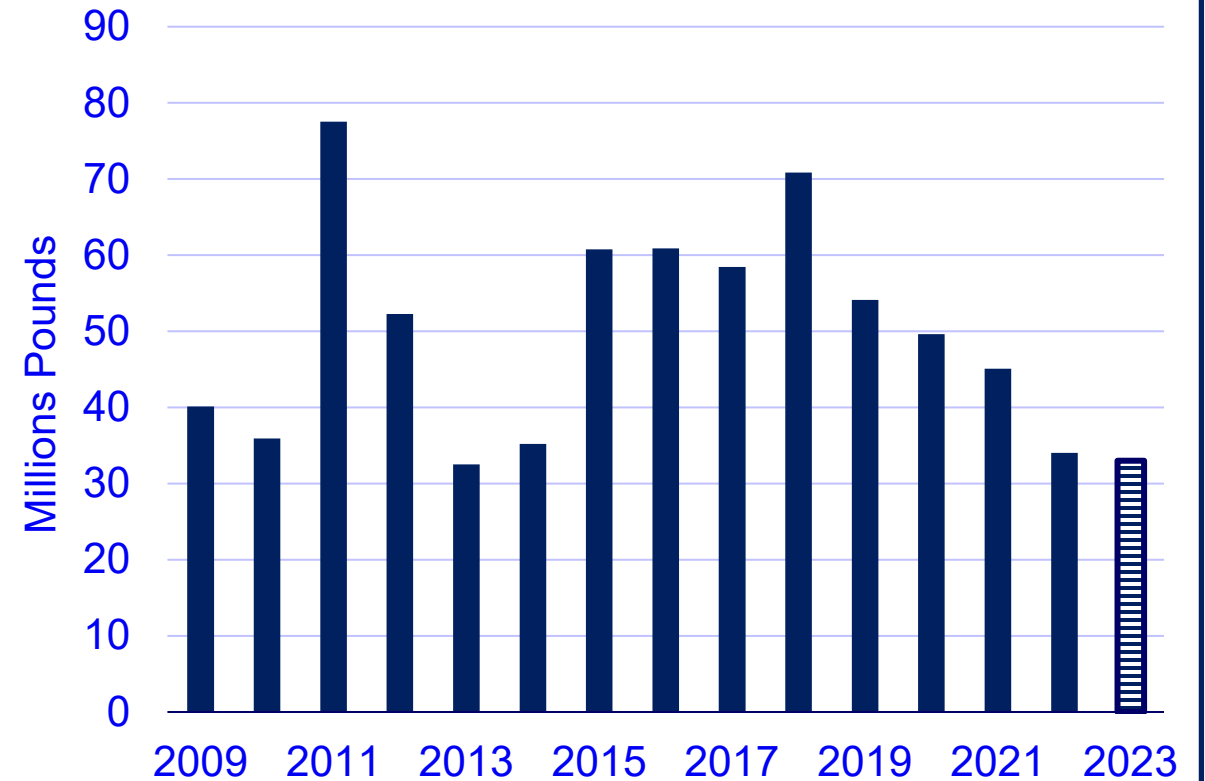


Caltrans Rubberized Paving

Total asphalt placed and percent rubberized hot mix asphalt



Caltrans crumb rubber used



Source: Caltrans Annual Crumb Rubber Reports
(2023 Data are draft estimates)

2023 CalRecycle Support

Rubberized Pavement Grant Program (TRP)

- TRP16 (FY 2023/24): awarded 2023, 29 grantees estimate 12.2M pounds
- Historic Average: 8.8M pounds per year

Tire Incentive Program (TIP)

- TIP11 (FY 2023/24): awarded 2023, 8 grantees estimate 18.3M pounds
- TIP participants reported purchases of 16.0M pounds in 2023
- Historic average: 12.9M pounds per year

Tire Derived Aggregate (TDA) Grant Program

- TDA22 (FY 2023/24): awarded 2023, 1 grantee estimate 1.0M pounds
- Historic Average: 10.0M pounds per year

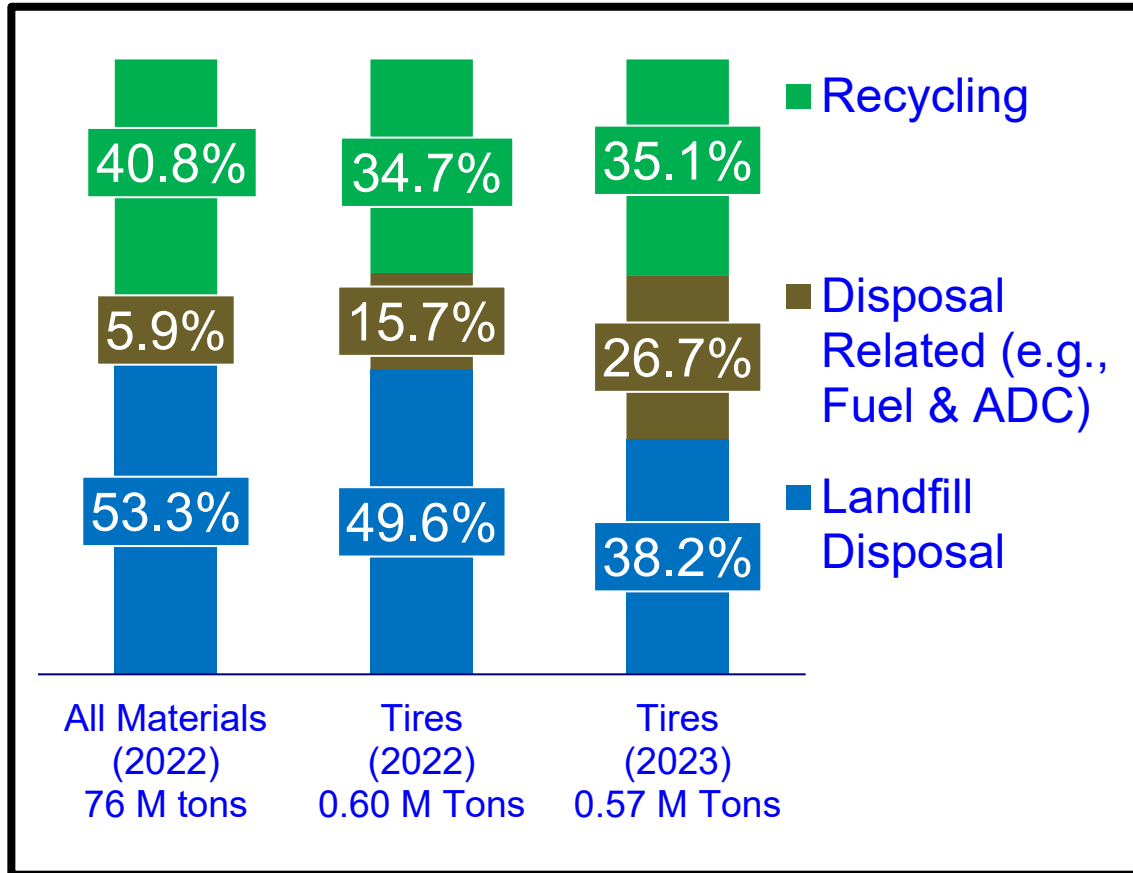
Tire Derived Product (TDP) Grant Program

- TDP21 (FY 2023/24): no eligible applicants, zero awarded
- Historic Average: 3.0M pounds per year

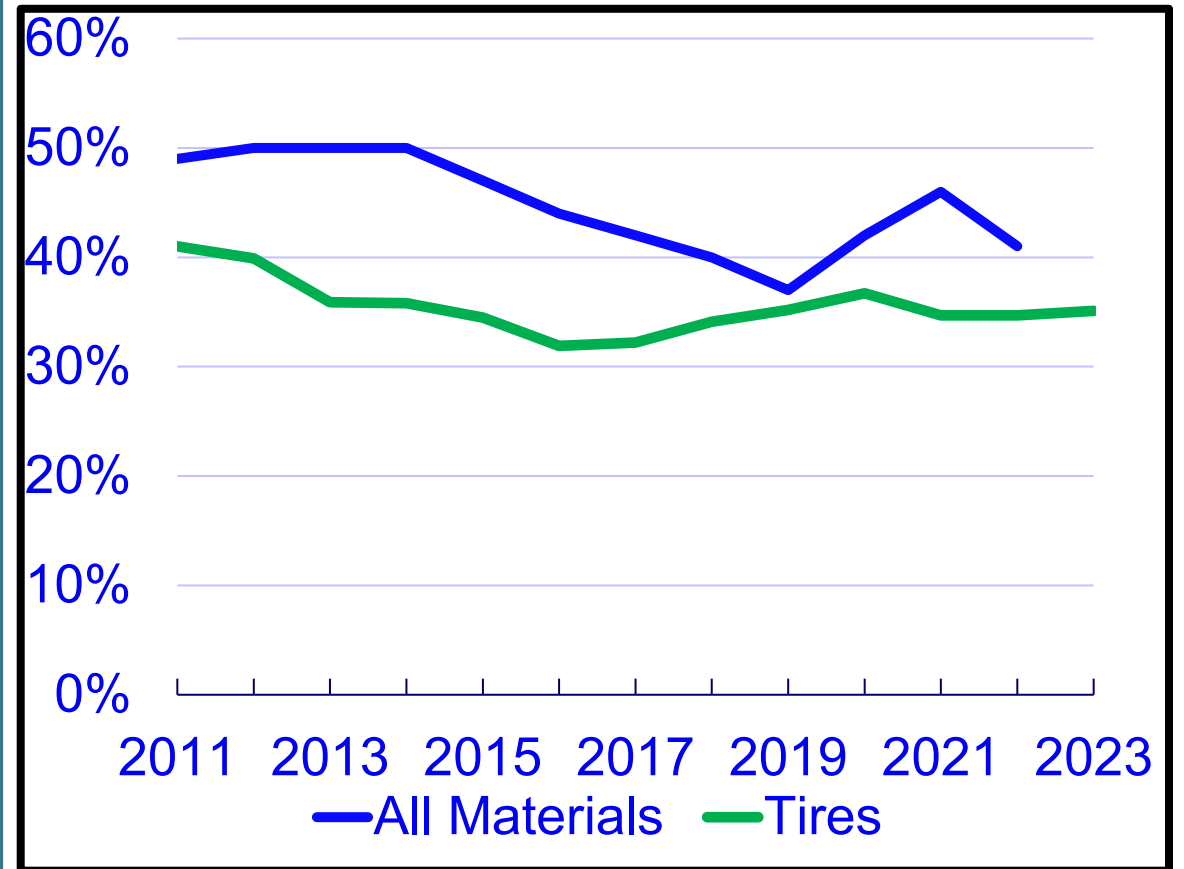
3. Recycling Outlook

Waste Tire Management in the California Context

How waste was managed



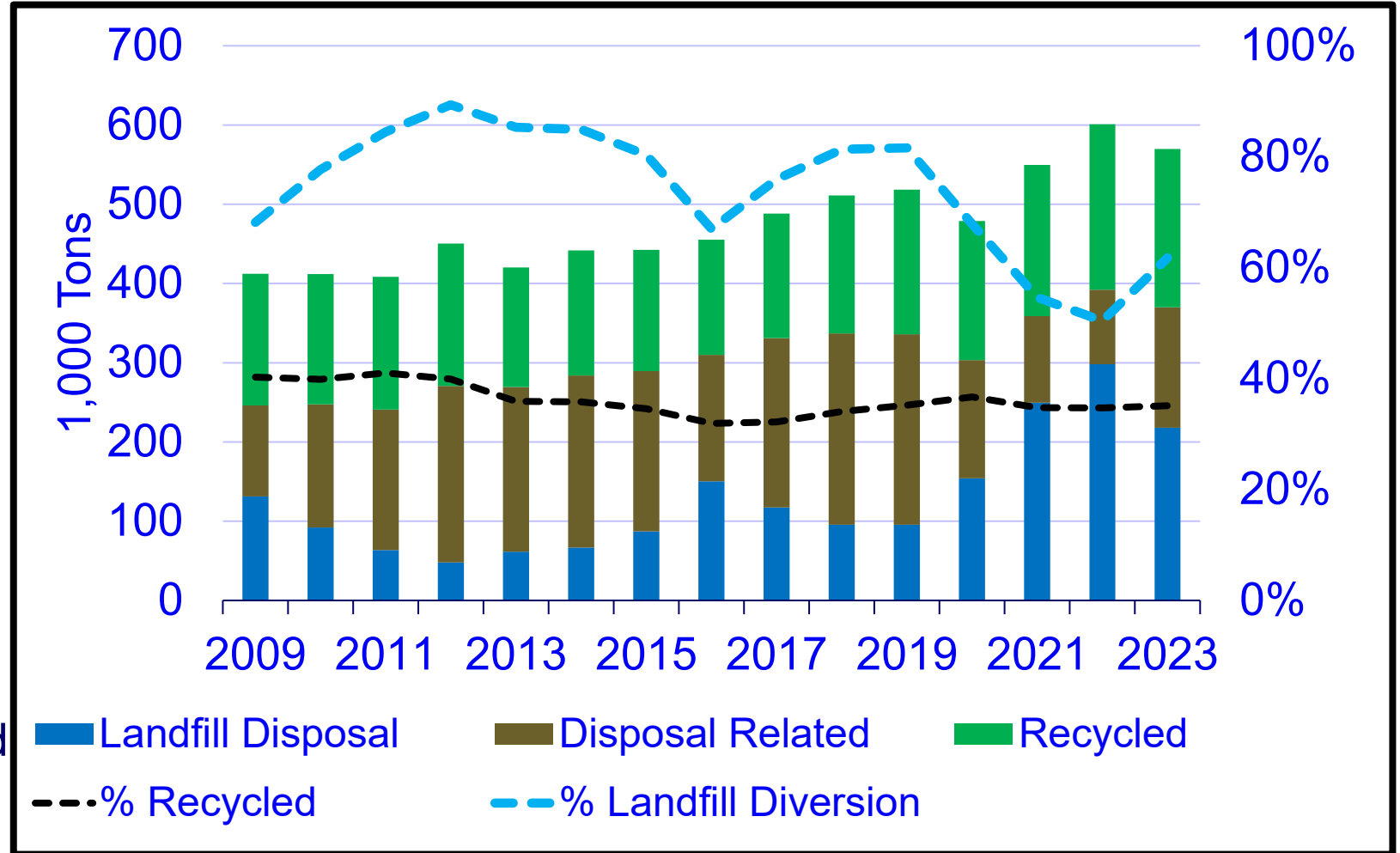
Recycling rate trend



Source for All Materials: CalRecycle tire market surveys and published website data

Recycling Outlook

- 2023 recycling tons decreased 4% to 199,889
- 2023 recycling rate increased 0.4% to 35.1%
- 2023 trend considerations
 - recycling rate is stable
 - export demand increased
 - recent investments and ownership changes



Feedback welcome by December 9, 2024
Report expected by January 31, 2025

Questions?

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Appendix

Source Data Used for Charts

Slide 5 Source Data: California Waste Tire Flows (2023)

Category	2023 Tons	2023 Percent
Retreads	55,645	9.8%
Used Tires	44,203	7.8%
Tire Derived Aggregate	8,682	1.5%
Crumb/Ground Rubber	78,159	13.7%
Other Recycling	13,200	2.3%
TDF (In-State)	20,858	3.7%
TDF (Export)	105,091	18.4%
Baled Waste Tires & Treads (Export)	6,630	1.2%
ADC/Beneficial Reuse	19,307	3.4%
Landfill Disposal	217,909	38.2%
Total	569,684	100.0%

Slides 6, 8, 9, and 12 Source Data: 15-Year Trend by Market Segment (Tons), Part A

Category	2009	2010	2011	2012	2013	2014	2015
Disposal	131,152	92,033	63,444	47,908	61,682	66,770	87,170
ADC	12,042	7,928	19,589	10,486	12,316	14,691	15,217
Exported TDF & Bales	33,000	64,000	96,000	135,000	110,144	110,000	94,000
In-State TDF	69,926	83,675	61,911	77,209	85,295	92,352	93,165
Other Recycling	12,221	12,121	13,427	14,059	12,166	11,643	12,114
Civil Engineering (TDA)	17,510	18,274	5,915	5,844	4,557	12,632	11,668
Crumb/Ground Rubber	55,000	59,850	61,700	68,350	55,350	49,200	54,700
Used Tires	37,266	37,942	45,823	51,678	38,033	42,278	30,927
Retread	44,000	36,018	40,651	39,838	40,635	42,341	43,358
Total Managed	412,117	411,842	408,459	450,372	420,177	441,907	442,318

Slides 6, 8, 9, and 12 Source Data: 15-Year Trend by Market Segment (Tons), Part B

Category	2016	2017	2018	2019	2020	2021	2022	2023
Disposal	150,226	117,448	95,401	95,412	154,050	249,377	298,084	217,909
ADC	16,798	18,108	17,975	16,784	14,876	17,440	21,169	19,307
Exported TDF & Bales	62,476	113,405	135,236	145,412	76,612	43,664	40,537	111,721
In-State TDF	80,380	82,194	88,386	78,307	57,611	48,243	32,457	20,858
Other Recycling	9,790	10,433	16,791	16,442	11,862	18,082	16,587	13,200
Civil Engineering (TDA)	10,961	6,431	5,127	13,330	16,911	6,575	7,371	8,682
Crumb/Ground Rubber	43,165	50,345	61,728	59,985	50,530	70,862	78,341	78,159
Used Tires	39,032	41,375	42,692	44,757	51,036	43,044	49,112	44,203
Retread	42,341	48,409	47,925	47,925	45,529	54,635	57,366	55,645
Total Managed	455,168	488,149	511,262	518,353	479,017	551,921	601,024	569,684

Slide 10 Source Data: Exported California-Generated TDF and Waste Tire/Tread Bales (Tons)

Category	2009	2010	2011	2012	2013	2014
Size-Reduced TDF	NA	NA	NA	NA	NA	74,000
Baled Waste Tires & Treads	NA	NA	NA	NA	NA	36,000
Total Exported TDF/Bales	33,000	64,000	96,000	135,000	110,144	110,000

Category	2015	2016	2017	2018	2019	2020	2021
Size-Reduced TDF	66,000	47,476	87,317	99,197	114,427	73,412	40,148
Baled Waste Tires & Treads	28,000	15,000	26,089	36,039	30,985	3,200	3,516
Total Exported TDF/Bales	94,000	62,476	113,405	135,236	145,412	76,612	43,664

Category	2022	2023
Size-Reduced TDF	37,037	105,091
Baled Waste Tires & Treads	3,500	6,630
Total Exported TDF/Bales	40,537	111,721



Slide 11 Source Data: California Generated In-State TDF Shipments (Tons)

Category	2008	2009	2010	2011	2012	2013
In-State TDF (Whole Tires and Size-Reduced)	75,020	69,926	83,675	61,911	77,209	81,982
Fiber From Processors	NA	NA	NA	NA	NA	NA
Total Exported TDF/Bales	75,020	69,926	83,675	61,911	77,209	85,295

Category	2014	2015	2016	2017	2018	2019	2020
In-State TDF (Whole Tires and Size-Reduced)	83,934	85,721	72,723	75,989	80,603	70,807	57,939
Fiber From Processors	8,418	7,443	7,656	6,205	7,783	7,500	6,297
Total Exported TDF/Bales	92,352	93,165	80,380	82,194	88,386	78,307	57,611

Category	2021	2022	2023
In-State TDF (Whole and Size-Reduced)	39,704	30,915	19,558
Fiber From Processors	8,539	1,542	1,300
Total Exported TDF/Bales	48,243	32,457	20,858



Slide 12 Source Data: Civil Engineering (Tire Derived Aggregate) (Tons)

Category	2008	2009	2010	2011	2012	2013	2014
Landfill Projects	20,060	13,975	17,924	5,915	5,844	2,612	8,806
Non-Landfill Projects	7,300	3,535	350	0	0	1,945	3,826
Total Civil Engineering	27,890	17,510	18,274	5,915	5,844	4,557	12,632

Category	2015	2016	2017	2018	2019	2020	2021	2022	2023
Landfill Projects	10,374	7,083	5,583	4,021	6,682	16,311	6,575	7,371	3,200
Non-Landfill Projects	1,294	3,878	853	1,106	6,648	600	0	0	5,482
Total Civil Engineering	11,668	10,961	6,431	5,127	13,330	16,911	6,575	7,371	8,682

Slide 13 Source Data: Crumb Rubber and Ground Rubber Shipments (Tons)

Category	2008	2009	2010	2011	2012	2013	2014
Paving	28,066	30,160	35,206	34,043	30,793	24,806	23,429
Turf	15,852	8,723	9,605	11,871	15,089	14,034	11,355
Molded / Other	13,903	7,733	7,308	8,357	10,076	6,583	6,719
Ground Rubber Applications	7,471	8,383	7,731	7,428	12,392	9,927	7,698
Total	65,292	55,000	59,850	61,700	68,350	55,350	49,200

Category	2015	2016	2017	2018	2019	2020	2021	2022	2023
Paving	27,808	NA	NA	NA	NA	NA	NA	NA	NA
Turf	13,415	NA	NA	NA	NA	NA	NA	NA	NA
Molded / Other	4,759	NA	NA	NA	NA	NA	NA	NA	NA
Ground Rubber Applications	8,718	NA	NA	NA	NA	NA	NA	NA	NA
Total	54,700	43,165	50,345	61,728	59,985	50,530	70,862	78,341	78,159

Slide 16 Source Data: Caltrans Rubberized Paving, Part A

Total Asphalt Placed and Rubber Asphalt % of Total

Category	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total Asphalt Placed (Million Metric Tons)	5.59	3.86	7.52	6.33	4.58	4.12	4.60	4.79	4.06	4.77
Rubberized Asphalt (RHMA) (% of Total)	23.6	30.6	34.7	29.2	22.9	26.7	41.3	39.8	45.0	46.3

Category	2019	2020	2021	2022	2023
Total Asphalt Placed (Million Metric Tons)	3.86	3.4	3.28	2.70	2.60
Rubberized Asphalt (RHMA) (% of Total)	39.8%	41.3%	38%	36.2%	35.8%

Source: Caltrans Annual Crumb Rubber Reports, Draft 2023 report values.

Slide 16 Source Data: Caltrans Rubberized Paving, Part B

Caltrans Crumb Rubber Used and Pounds per Total Metric Ton Asphalt Placed

Category	2009	2010	2011	2012	2013	2014	2015	2016	2017
Caltrans Crumb Rubber Used (M Pounds)	40.1	35.9	77.5	52.3	32.5	35.2	60.8	60.9	58.5

Category	2018	2019	2020	2021	2022	2023
Caltrans Crumb Rubber Used (M Pounds)	70.8	54.1	49.6	45.3	34.0	33.5

Source: Caltrans Annual Crumb Rubber Reports, Draft 2023 report values.

Slide 19 Source Data: All Materials and Tires Recycling Rate Trend, Part B (Right Chart)

Year	All Materials Recycling Rate	Waste Tires Recycling Rate
2011	49.0%	41.0%
2012	50.0%	39.9%
2013	50.0%	35.9%
2014	50.0%	35.8%
2015	47.0%	34.5%
2016	44.0%	31.9%
2017	42.0%	32.2%
2018	40.0%	34.1%
2019	37.0%	35.2%
2020	42.0%	36.7%
2021	40.0%	35.0%
2022	41.0%	33.1%
2023	NA	35.1%

Slide 19 Source Data: How Waste Was Managed, Part A (Left Chart)

Category	All Materials (2022) 76M Tons	Tires (2022) 0.60M Tons	Tires (2023) 0.57M Tons
Landfill Disposal	53.3%	49.6%	38.2%
Disposal-Related	5.9%	15.7%	26.7%
Recycling	40.8%	34.7%	35.1%
Total	100%	100%	100%

Slide 20 Source Data: Recycling and Diversion Trend

Category	2008	2009	2010	2011	2012	2013	2014	2015
Landfill Disposal (Tons)	145,033	131,152	92,033	63,444	47,908	61,682	66,770	87,170
Disposal-Related (Tons)	117,600	114,968	155,603	177,500	222,695	207,754	217,043	202,382
Recycled (Tons)	185,441	165,997	164,206	167,516	179,768	150,741	158,094	152,767
% Recycled	41.4%	40.3%	39.9%	41.0%	39.9%	35.9%	35.8%	34.5%
% Landfill Diversion	67.6%	68.2%	77.7%	84.5%	89.4%	85.3%	84.9%	80.3%

Category	2016	2017	2018	2019	2020	2021	2022	2023
Landfill Disposal (Tons)	150,226	117,448	95,401	95,412	154,050	249,377	298,084	217,909
Disposal-Related (Tons)	159,654	213,707	241,597	240,503	149,099	109,347	94,163	151,886
Recycled (Tons)	145,288	156,994	174,264	182,438	175,868	193,197	208,777	199,889
% Recycled	31.9%	32.2%	34.1%	35.2%	36.7%	35.0%	34.7%	35.1%
% Landfill Diversion	67.0%	75.9%	81.3%	81.6%	67.8%	54.8%	50.4%	61.7%

