

California Waste Tire Market Report: 2021

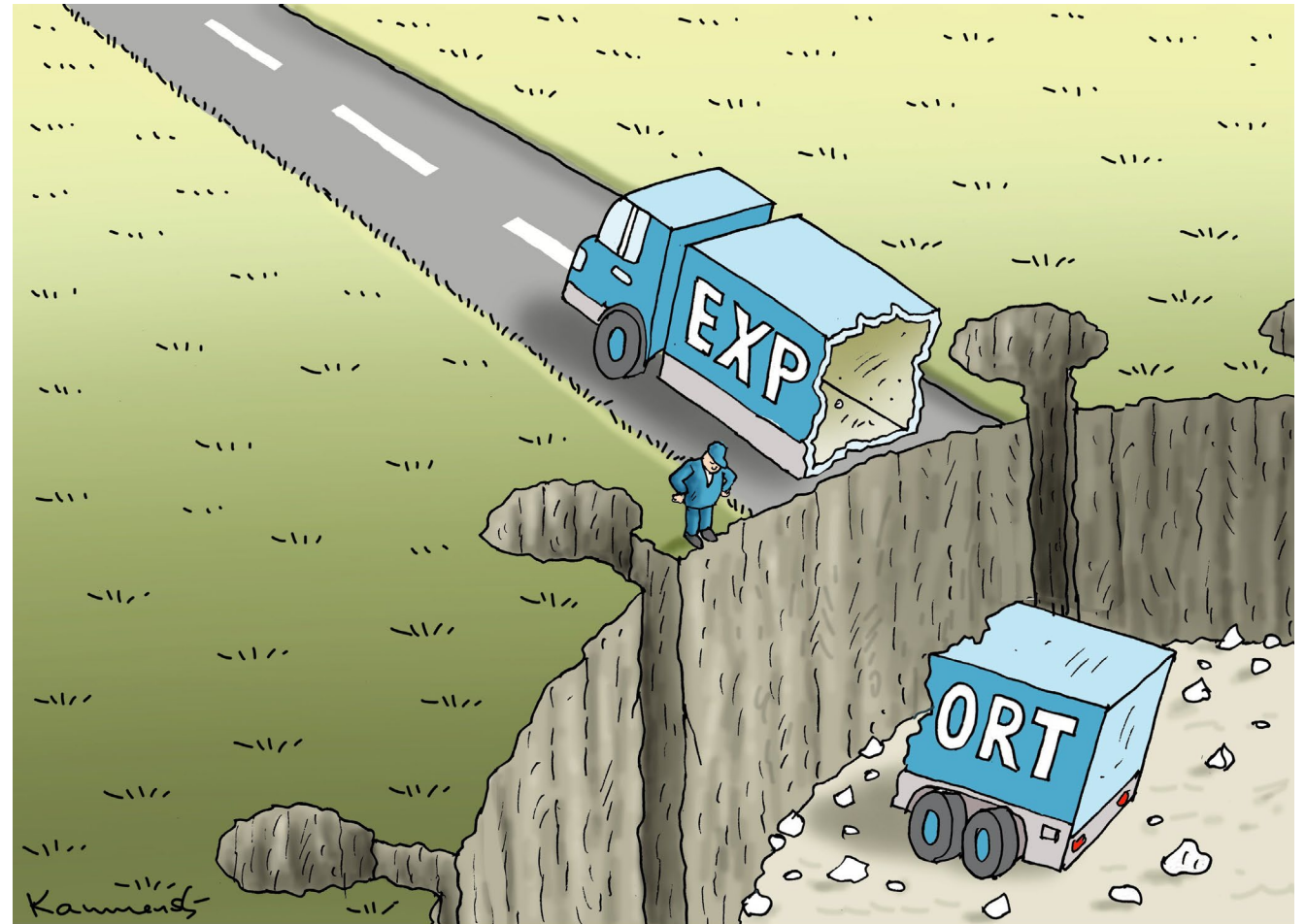
Boisson Consulting
Draft Findings June 22, 2022

Outline

1. The Bottom Line
2. Market Trends by Category
3. Recycling Outlook



The 2021 Bottom Line: Thriving Amid Continuing Disruptions



CartoonStock.com



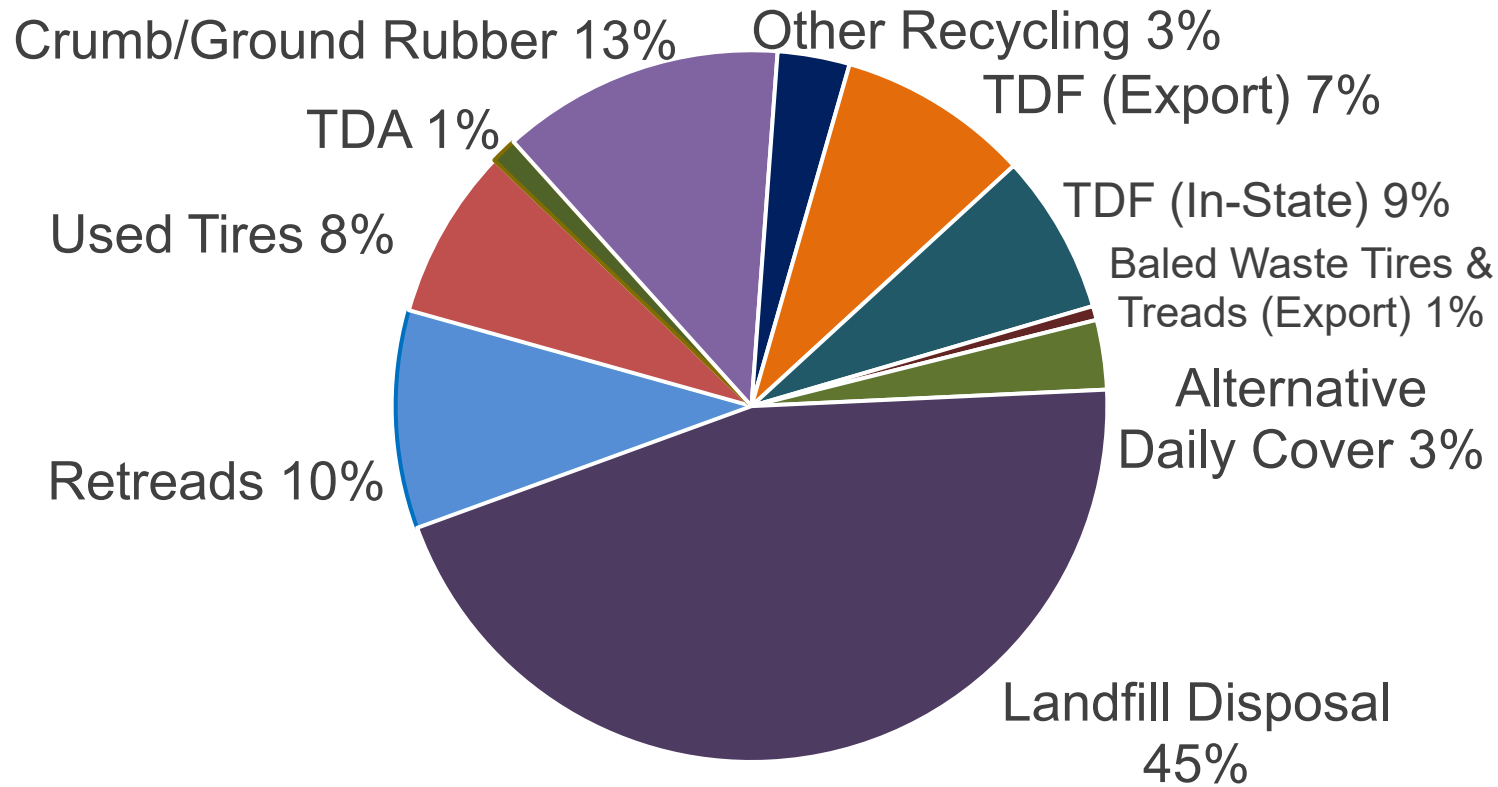
The Roller Coaster

- COVID – Vaccines, Variants, Spikes, Less Restrictions
- Government Support, 2021 Economic Rebound, Historic State Surplus → Rising Inflation, 2022 Recession Risk
- Low Unemployment, Increased Wages → Staffing Challenges
- Trucking and Export/Import Challenges & Costs
- Supply Chain Disruptions
- More Global Uncertainties



2021 Draft California Waste Tire Flows

Total Managed: 551,900 Tons



Recycling

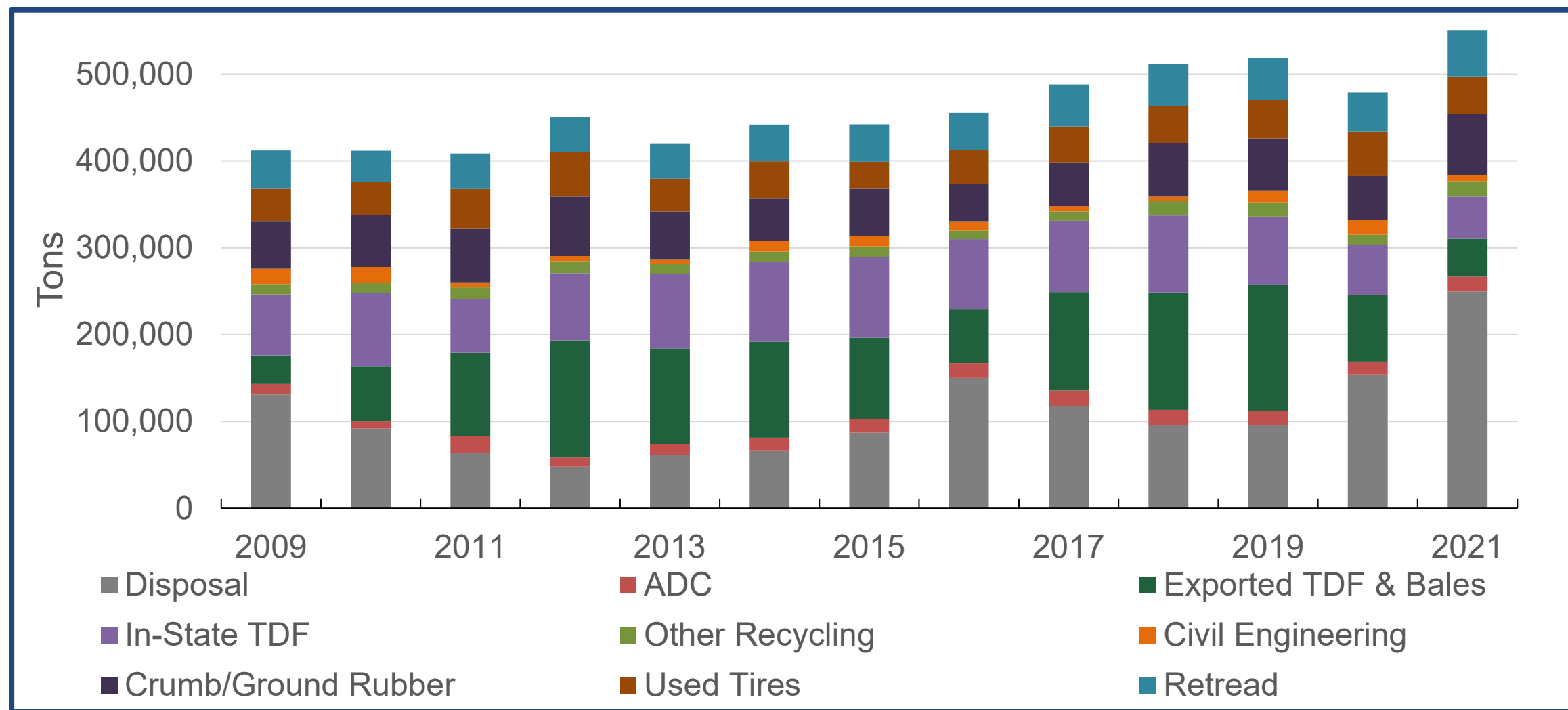
35% of Total
193,200 Tons

“Disposal Related”

20% of Total
109,300 Tons
Includes TDF and ADC



13 Year Trend by Market Segment

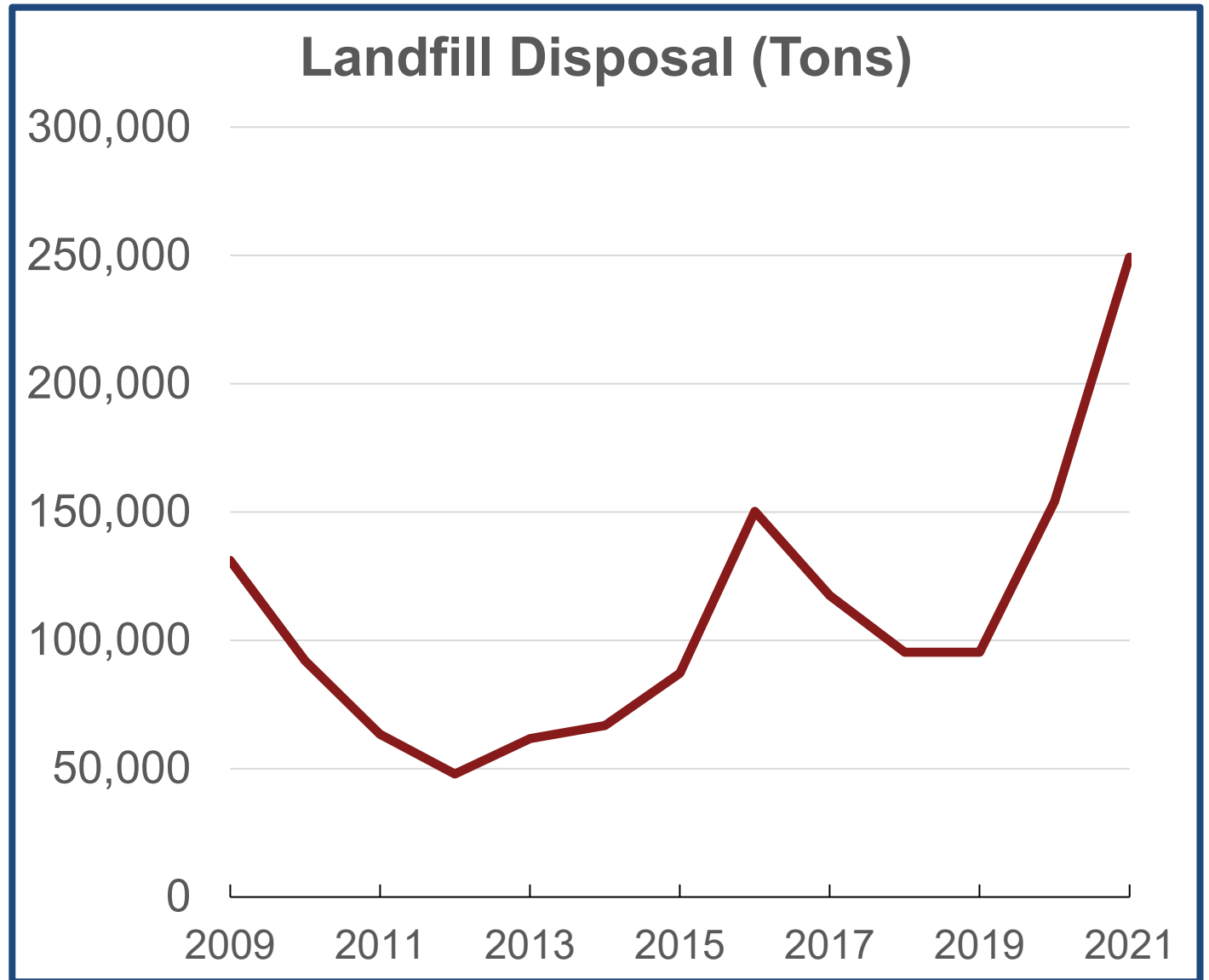


2. Market Trends by Category



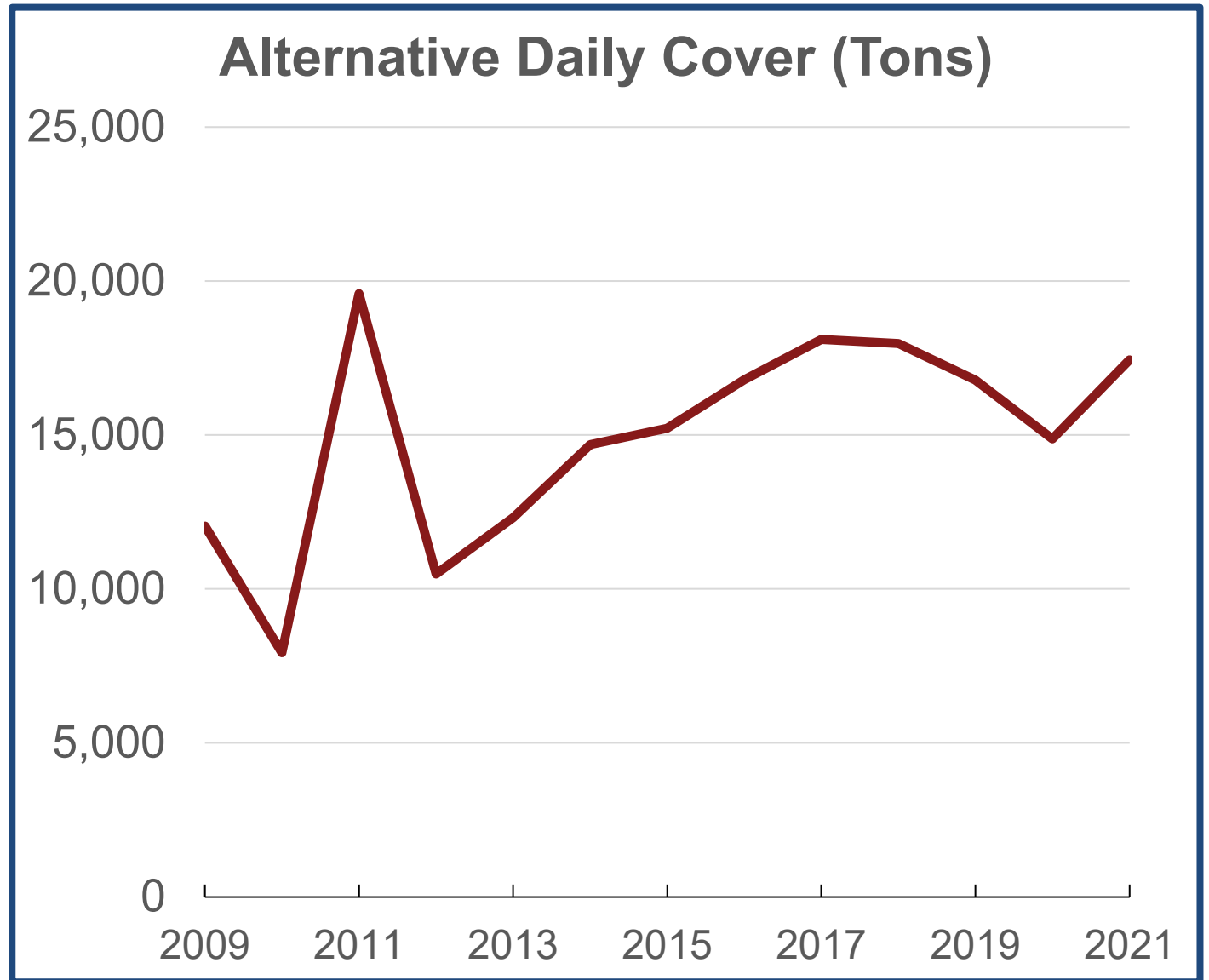
Disposal

- 249,400 Tons, 45% of Total
- Up 62% over 2021
- 20+ Year Record High
- Shift from Exported and In-State TDF
- 2022 Trend: Staying High



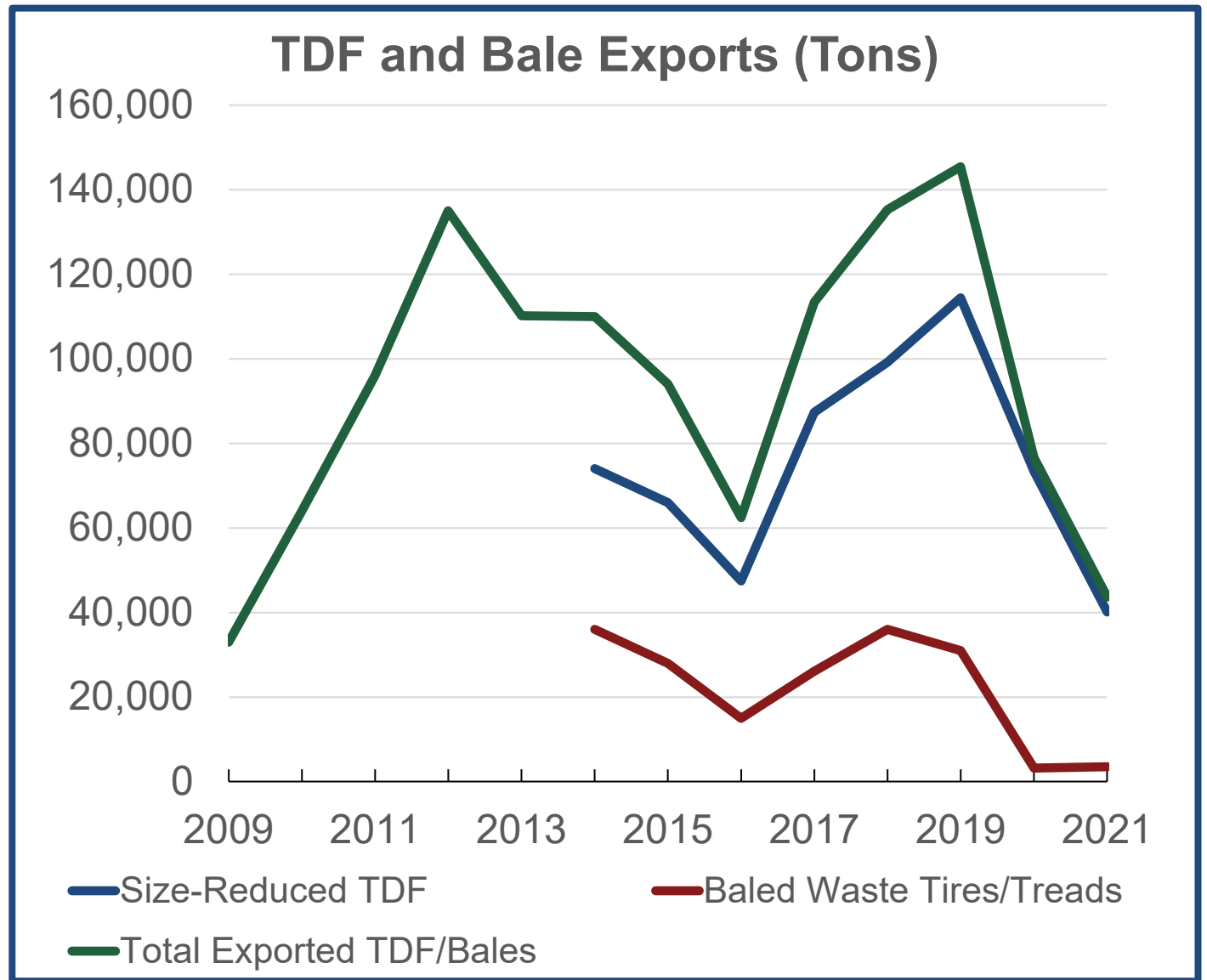
Alternative Daily Cover

- 17,400 Tons, 3% of Total
- Up 17% 2 Landfills Reporting
- 2022 Trend: Steady



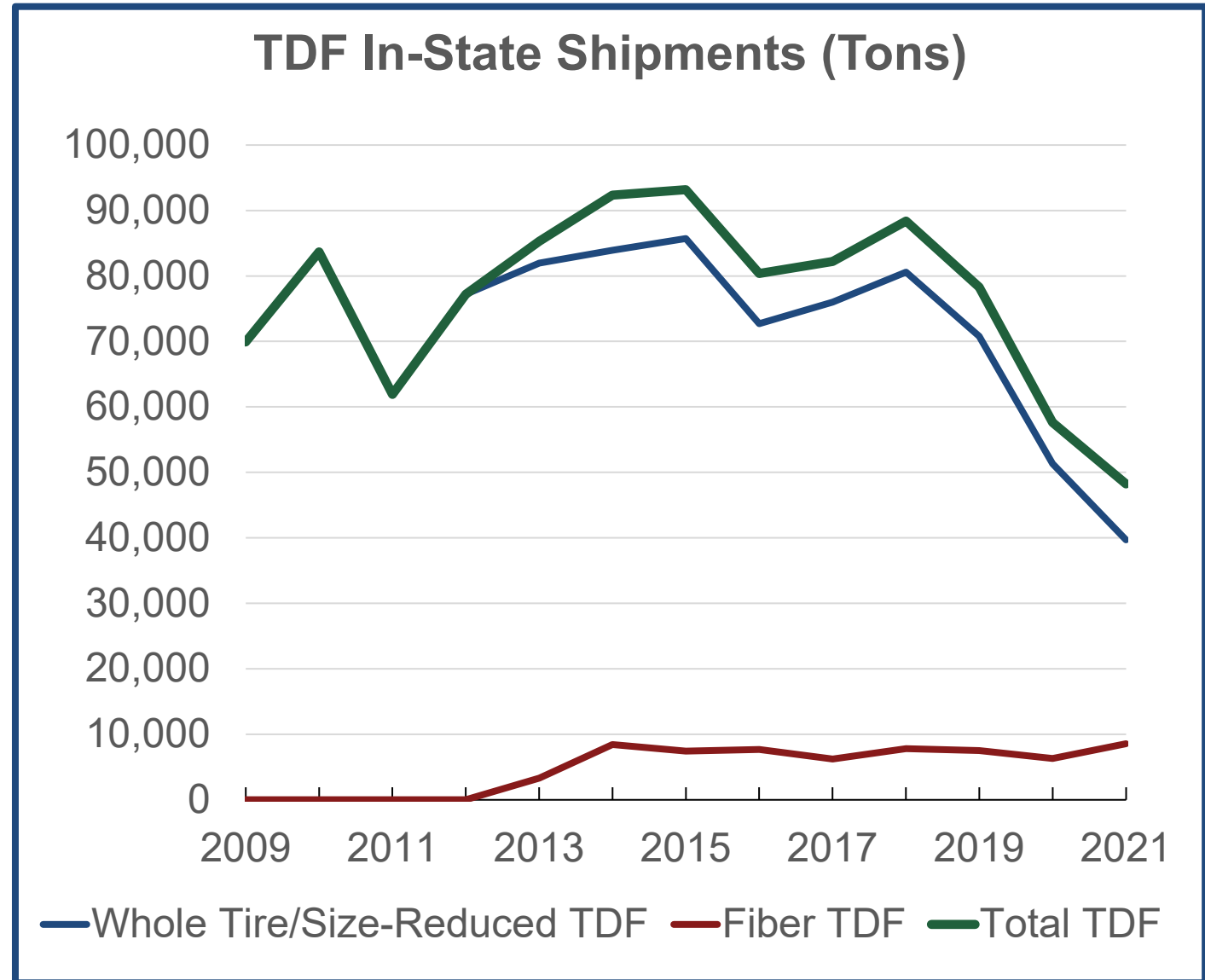
Exported TDF and Baled Waste Tires / Treads

- 40,100 Tons, 7% of Total
- Down 45%
- Lowest Since 2009
- Exported TDF down 45%
- Baled Truck Tire Treads Up
- Waste Tire Bale Exports Not Moving
- Poor Economics
- 2022 Trend: Staying Low



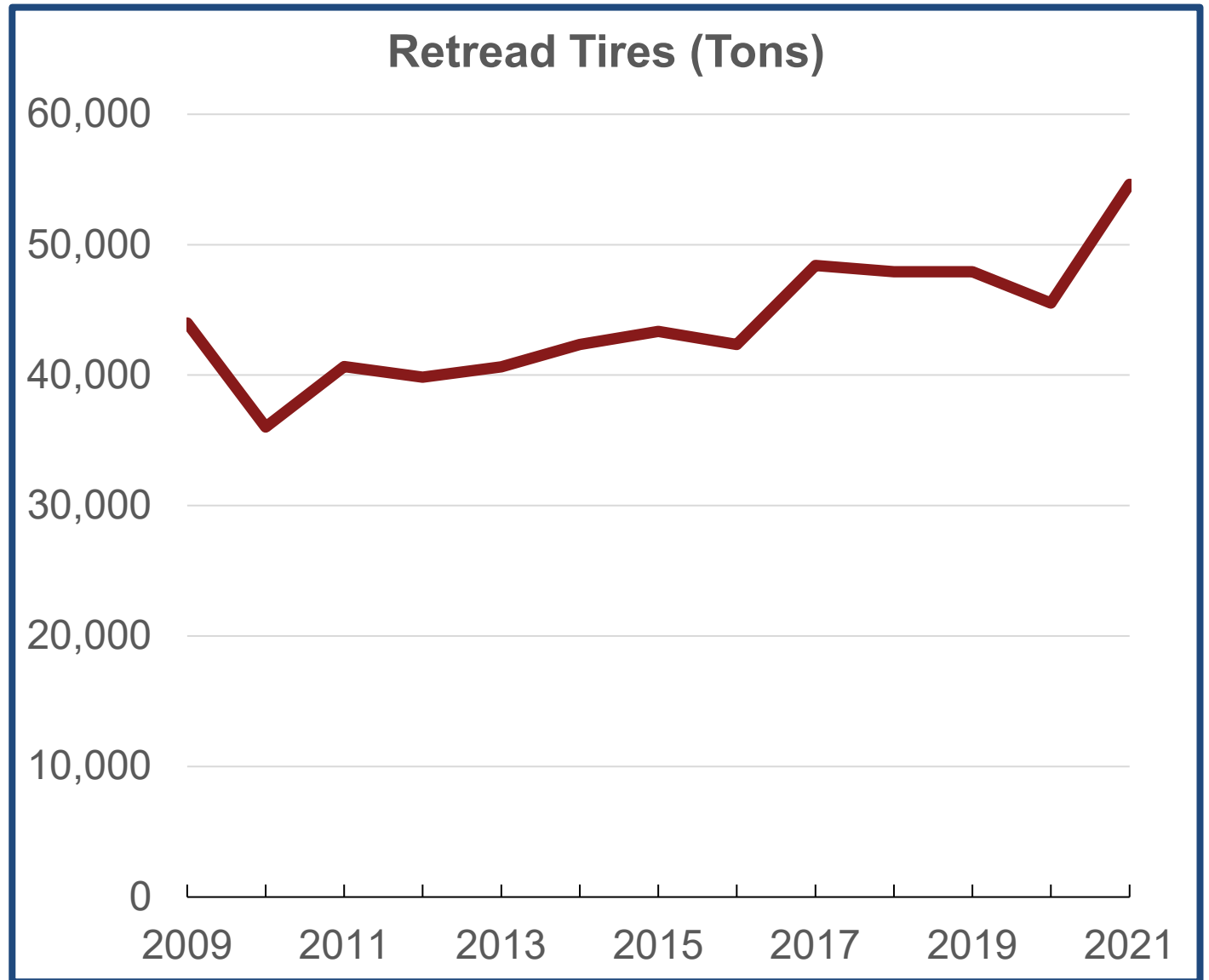
In-State TDF

- 48,200 Tons, 9% of Total
- Down 16%
- Includes 8,500 Tons Fiber
- Additional Tons Derived From Imported Waste Tires
- Changing Cement Kiln Fuel Use Patterns
- 2022 Trend: Stable or Increase



Retreads

- 54,600 Tons, 10% of Total
- Up 20% or More
- New Tire Price Increases, Supply Chain Disruptions, Tariffs
- 2022 Trend: Staying High But Reduction Possible



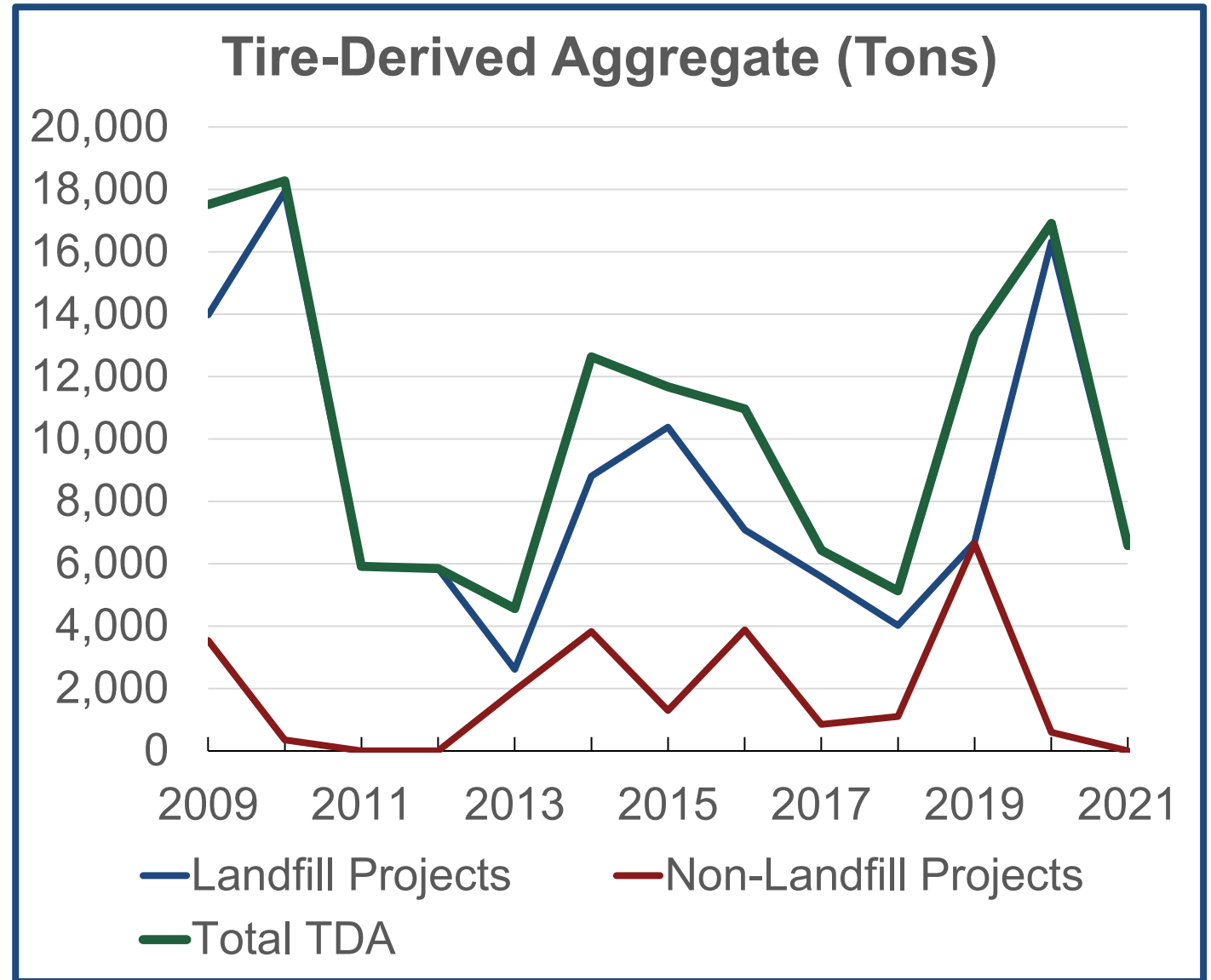
Used Tires

- 43,000 Tons
- 8% of Total
- Down from Relatively High 2020 Estimated Level
- But Still Strong
- Used Tires Sold in CA Tire Shops
- Also Exported (Mainly to Mexico, Capped by Quota)
- High Inflation May Impact Market



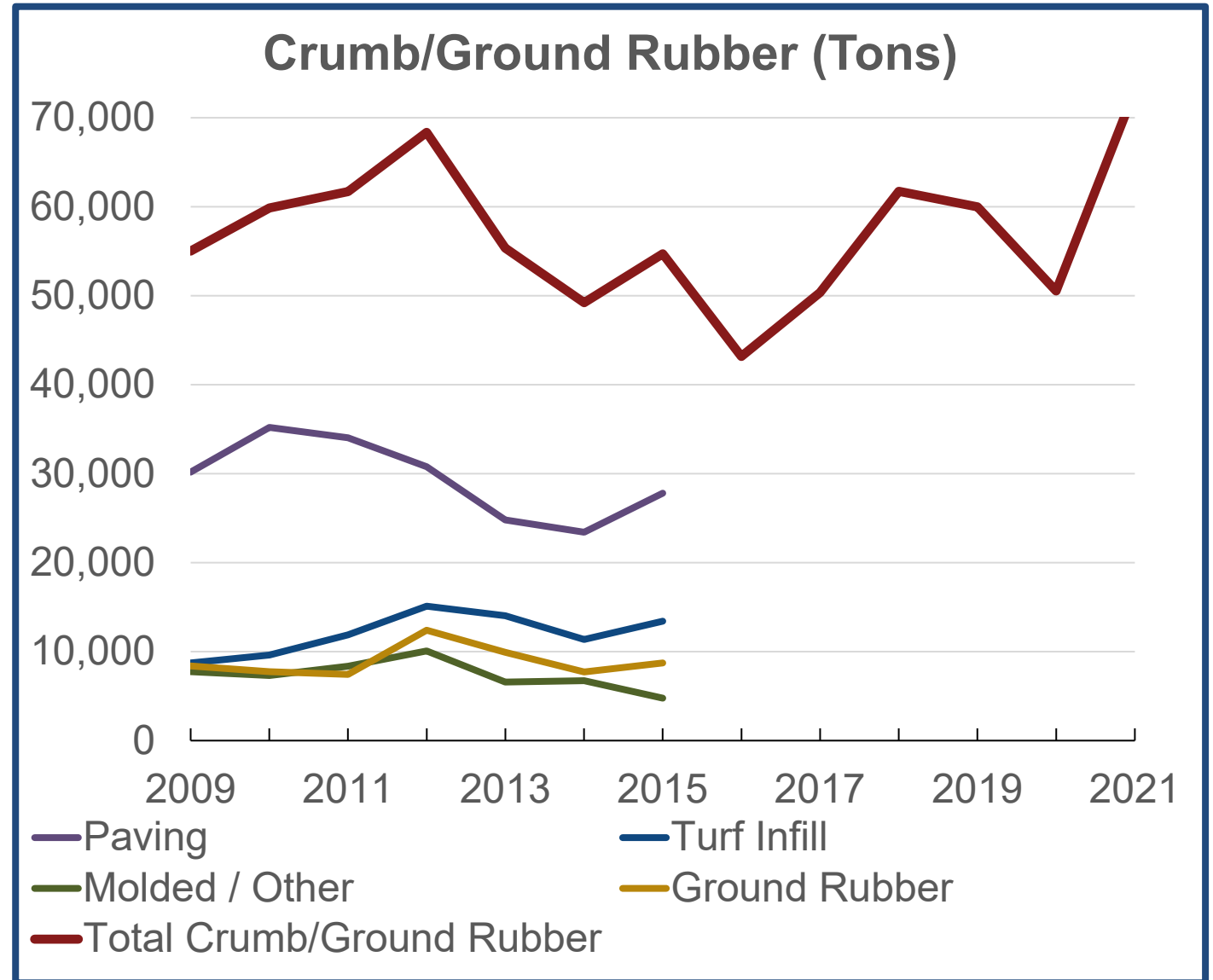
Tire-Derived Aggregate

- 6,600 Tons, 1% of Total
- Down 61%, Variable Market
- All Landfill Projects, One Non-Grant Project 73% of Total
- New LA Metro Grant Projects, 6,700 Tons (13.4 M Pounds)
- Grant-Funded Annual Average Use: 4,700 Tons (9.4 M Pounds)
- Grant Solicitation Published, \$750K/Year Allocated
- Pipeline Rebound?



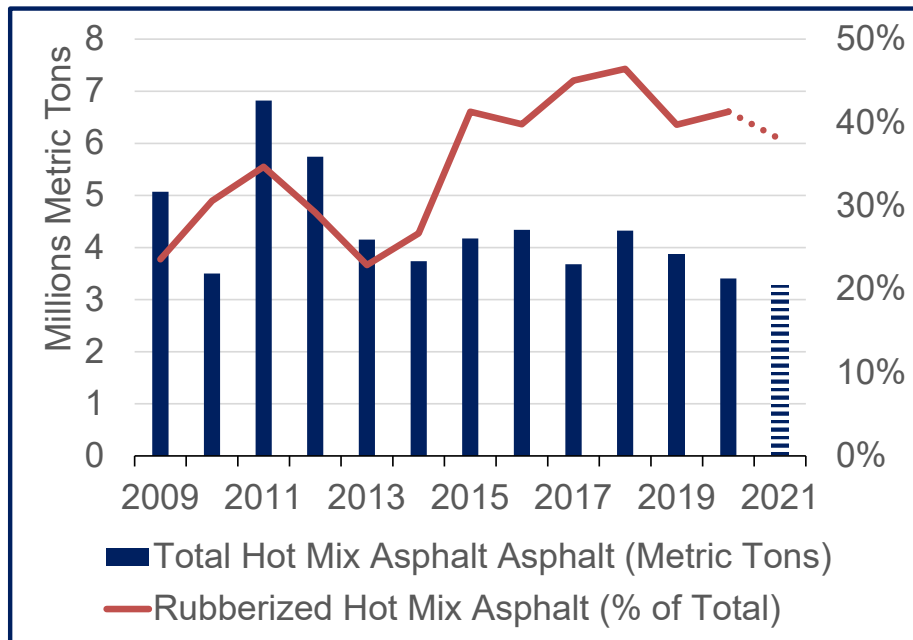
Crumb / Ground Rubber

- 70,900 Tons, 13% of Total
- Up 40%
- Paving: 72-92 M Pounds
- Molded/Other: 27-34 M Pounds
- Turf: 12-18 M Pounds
- Ground Rubber: 5-9 M Pounds
- 2022 Trend: Steady or Modest Growth

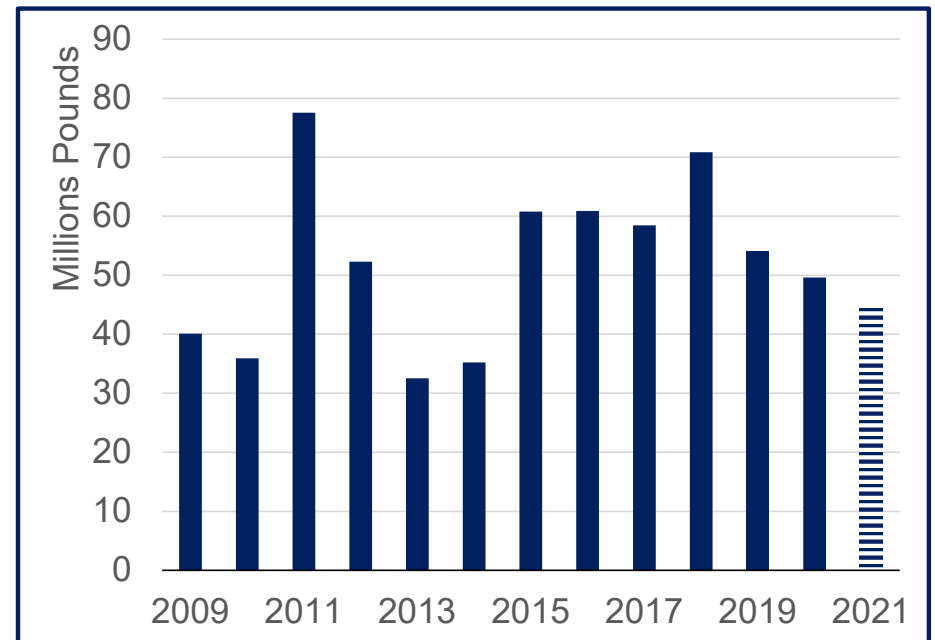


Caltrans Rubberized Paving

Total Asphalt Placed and Percent Rubberized Hot Mix Asphalt



Caltrans Crumb Rubber Used



Average: 51.8 Million Pounds per Year

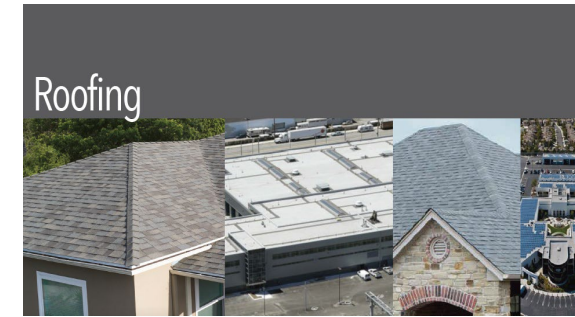
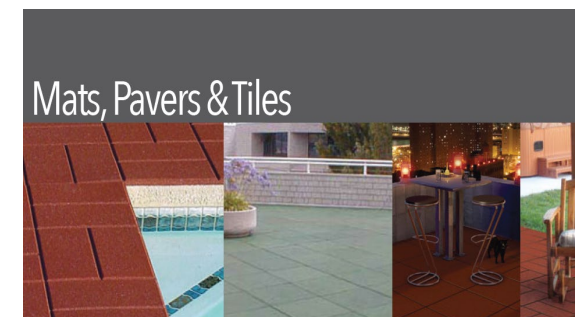
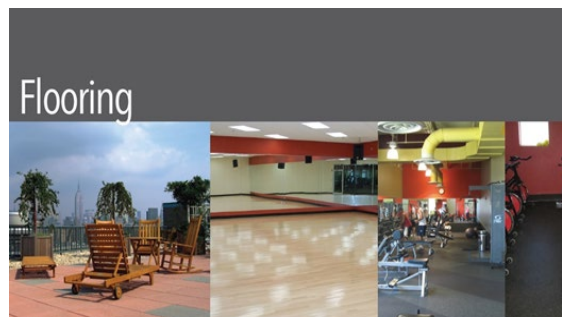
Source: Caltrans Annual Crumb Rubber Reports
(2021 Data are Preliminary Estimates)

2021 CalRecycle Support for Crumb Rubber

- **The Rubberized Pavement (TRP) Grant Program**
 - 2021/22: 37 Projects Estimate 10.9 Million Pounds Through April 2024
 - Historic Average: 9.0 M Pounds Per Year
- **Tire-Derived Product (TDP) Grant Program**
 - 2020/21: 5 Projects Estimate 1.1 M Pounds Through April 2024
 - Historic Average: 2.7 M Pounds Per Year
- **Tire Incentive Program (TIP)**
 - 2021/22 Cycle: 6 Companies Estimate 22.1 M Pounds Through April 2024
 - TIP Participants Reported Purchases of 24.8 M Pounds in 2021
 - Historic Average: 10.9 M Pounds per Year
- **Feedstock Conversion Services Contract (FCS)**
 - Testing and Technical Assistance – Cycle Now Open
 - Historic: 11 Manufacturers, 19 Products, >450 Certified Lab Tests



California Tire-Derived Product Catalog

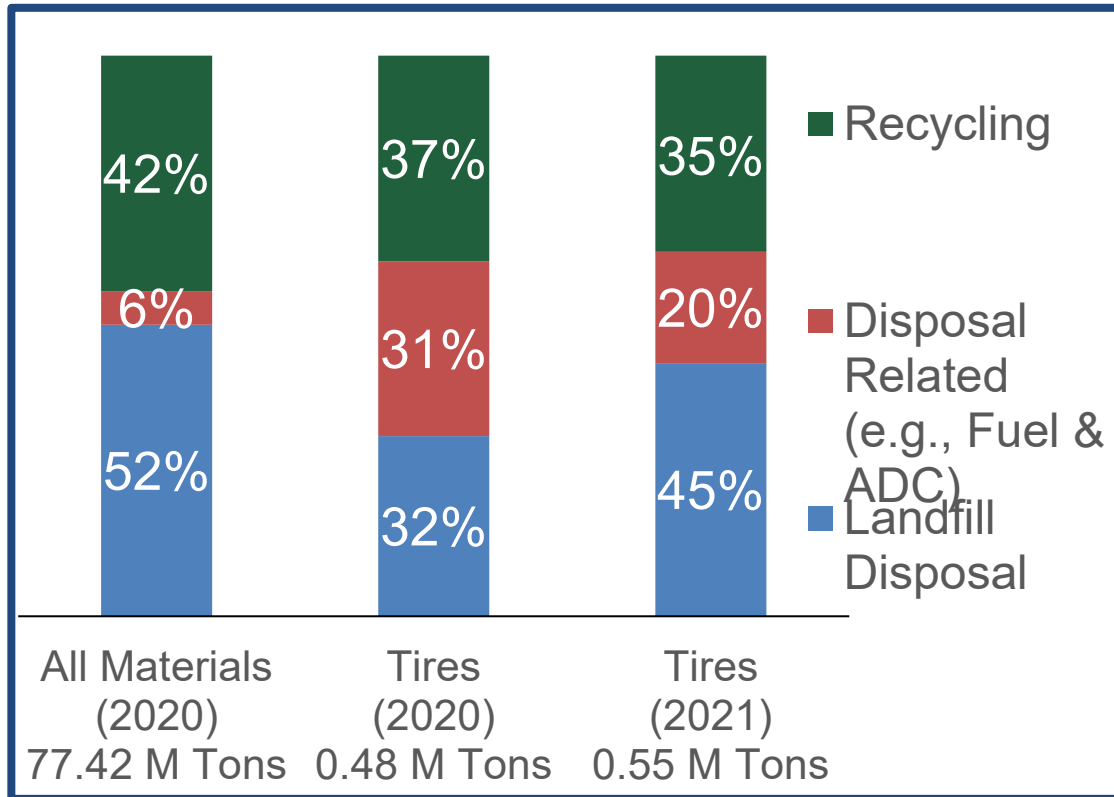


3. Recycling Outlook

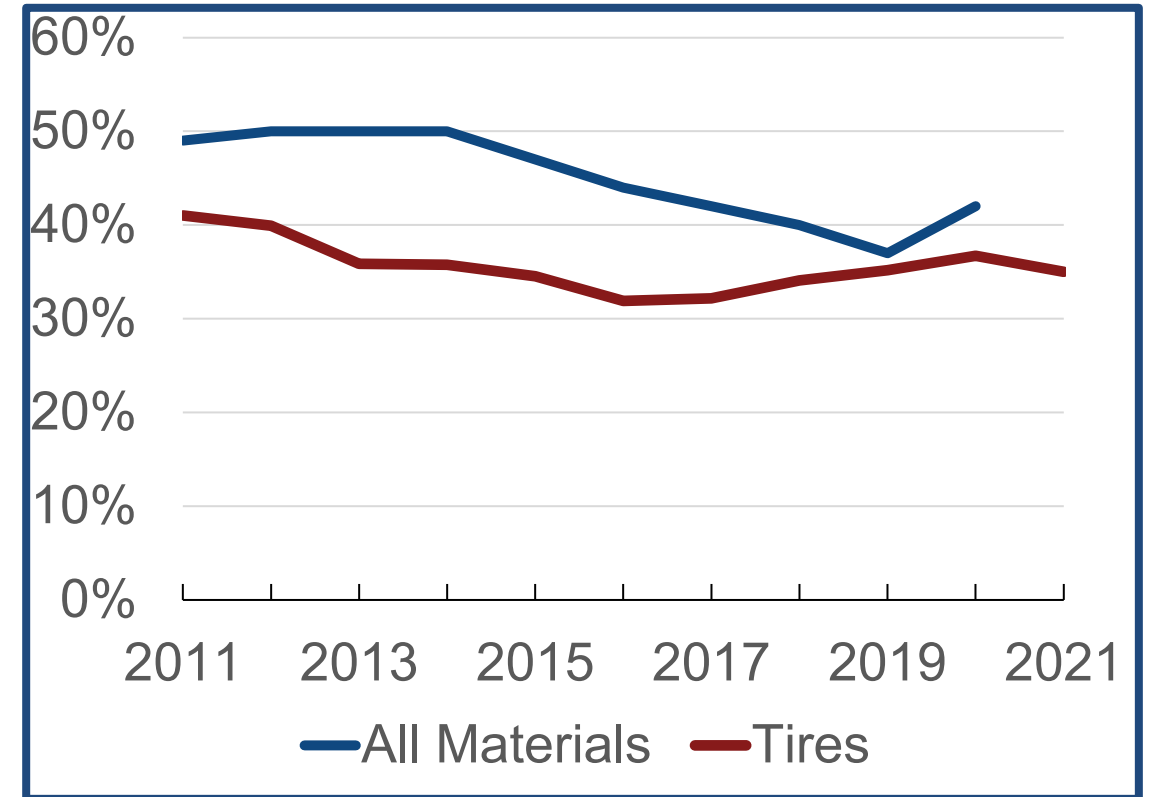


Waste Tire Management in the California Context

How Waste Was Managed



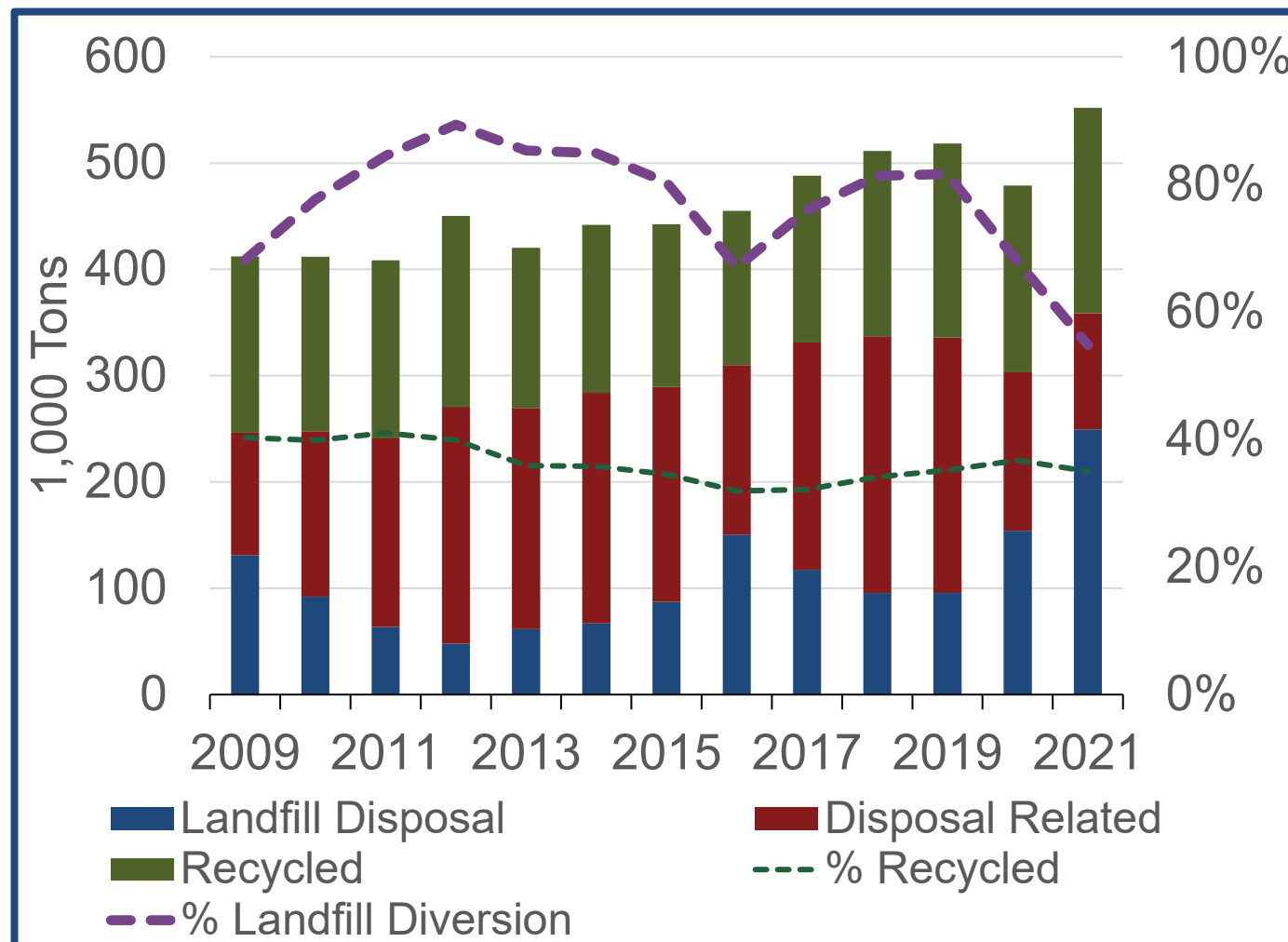
Recycling Rate Trend



Source for All Materials: CalRecycle, "State of Disposal and Recycling for Calendar Year 2020"

Recycling Outlook

- 2021 Recycling Tons Up 11% to 193,200
- 2021 Recycling Rate Down 1.7% Points to 35%
- 2022 Trend Considerations
 - Can 2021 Recycling Gains Be Maintained or Expanded?
 - Pace of Product Diversification
 - Reduced Disruptions?
 - Recent Investments and Ownership Changes
 - No Transformational Expansion on Horizon But Short-Term Growth Possible



Feedback Welcome by July 1, 2022
Report Expected in July

Questions?

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Register for the
CalRecycle 2022 Tire Conference
Pathway to Sustainability
Sacramento, November 2-3
<https://www.calrecycle.ca.gov/tires/events>



Appendix

Source Data Used for Charts



Slide 5 Source Data: California Waste Tire Flows (2021)

Category	2021 Tons	2021 Percent
Retreads	54,635	9.9%
Used Tires	43,044	7.8%
Tire-Derived Aggregate	70,862	12.8%
Crumb/Ground Rubber	6,575	1.2%
Other Recycling	18,082	3.3%
TDF (In-State)	48,243	8.7%
TDF (Export)	40,148	7.3%
Baled Waste Tires & Treads (Export)	3,516	0.6%
ADC/Beneficial Reuse	17,440	3.2%
Landfill Disposal	249,377	45.2%
Total	551,921	100.0%



Slides 6, 8, 9, and 12 Source Data: 13 Year Trend by Market Segment (Tons), Part A

Category	2008	2009	2010	2011	2012	2013	2014
Disposal	145,033	131,152	92,033	63,444	47,908	61,682	66,770
ADC	20,580	12,042	7,928	19,589	10,486	12,316	14,691
Exported TDF & Bales	22,000	33,000	64,000	96,000	135,000	110,144	110,000
In-State TDF	75,020	69,926	83,675	61,911	77,209	85,295	92,352
Other Recycling	14,460	12,221	12,121	13,427	14,059	12,166	11,643
Civil Engineering	27,890	17,510	18,274	5,915	5,844	4,557	12,632
Crumb/Ground Rubber	65,292	55,000	59,850	61,700	68,350	55,350	49,200
Used Tires	33,600	37,266	37,942	45,823	51,678	38,033	42,278
Retread	44,200	44,000	36,018	40,651	39,838	40,635	42,341
Total Managed	448,075	412,117	411,842	408,459	450,372	420,177	441,907



Slide 6, 8, 9, and 12 Source Data: 13 Year Trend by Market Segment (Tons), Part B

Category	2015	2016	2017	2018	2019	2020	2021
Disposal	87,170	150,226	117,448	95,401	95,412	154,050	249,377
ADC	15,217	16,798	18,108	17,975	16,784	14,876	17,440
Exported TDF & Bales	94,000	62,476	113,405	135,236	145,412	76,612	43,664
In-State TDF	93,165	80,380	82,194	88,386	78,307	57,611	48,243
Other Recycling	12,114	9,790	10,433	16,791	16,442	11,862	18,082
Civil Engineering	11,668	10,961	6,431	5,127	13,330	16,911	6,575
Crumb/Ground Rubber	54,700	43,165	50,345	61,728	59,985	50,530	70,862
Used Tires	30,927	39,032	41,375	42,692	44,757	51,036	43,044
Retread	43,358	42,341	48,409	47,925	47,925	45,529	54,635
Total Managed	442,318	455,168	488,149	511,262	518,353	479,017	551,921



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

Category	2008	2009	2010	2011	2012	2013
Size-Reduced TDF	NA	NA	NA	NA	NA	NA
Baled Waste Tires & Treads	NA	NA	NA	NA	NA	NA
Total Exported TDF/Bales	22,000	33,000	64,000	96,000	135,000	110,144

Category	2014	2015	2016	2017	2018	2019	2020
Size-Reduced TDF	74,000	66,000	47,476	87,317	99,197	114,427	73,412
Baled Waste Tires & Treads	36,000	28,000	15,000	26,089	36,039	30,985	3,200
Total Exported TDF/Bales	110,000	94,000	62,476	113,405	135,236	145,412	76,612

Category	2021
Size-Reduced TDF	40,148
Baled Waste Tires & Treads	3,516
Total Exported TDF/Bales	43,664



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
In-State TDF (Whole Tires and Size-Reduced)	39,704
Fiber From Processors	8,539
Total Exported TDF/Bales	48,243



Slide 14 Source Data: Tire-Derived Aggregate Trend (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
Landfill Projects	10,374	7,083	5,583	4,021	6,682	16,311	6,575
Non-Landfill Projects	1,294	3,878	853	1,106	6,648	600	0
Total Civil Engineering	11,668	10,961	6,431	5,127	13,330	16,911	6,575



Slide 15 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
Paving	27,808	NA	NA	NA	NA	NA	NA
Turf	13,415	NA	NA	NA	NA	NA	NA
Molded / Other	4,759	NA	NA	NA	NA	NA	NA
Ground Rubber Applications	8,718	NA	NA	NA	NA	NA	NA
Total	54,700	43,165	50,345	61,728	59,985	50,530	70,862



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
Total Asphalt Placed (Million Metric Tons)	3.86	3.4	NA
Rubberized Asphalt (RHMA) (% of Total)	39.8%	41.3%	NA

Source: Caltrans Annual Crumb Rubber Reports.



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
Caltrans Crumb Rubber Used (M Pounds)	70.8	54.1	49.6	NA



Slide 20 Source Data: All Materials and Tires Recycling Rate Trend, Part A (Left Chart)

Year	All Materials Recycling Rate	Waste Tires Recycling Rate
2010	49.0%	39.9%
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	NA	35.0%

Slide 20 Source Data: How Waste Was Managed, Part B (Right Chart)

Category	All Materials (2020) 77.42 M Tons	Tires (2020) 0.48 M Tons	Tires (2021) 0.55 M Tons
Landfill Disposal	52%	32%	45%
Disposal Related	6%	31%	20%
Recycling	42%	37%	35%
Total	100%	100%	100%



Slide 21 Source Data: Recycling and Diversion Trend

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

Category	2015	2016	2017	2018	2019	2020	2021
Landfill Disposal (Tons)	87,170	150,226	117,448	95,401	95,412	154,050	249,377
Disposal Related (Tons)	202,382	159,654	213,707	241,597	240,503	149,099	109,347
Recycled (Tons)	152,767	145,288	156,994	174,264	182,438	175,868	193,197
% Recycled	34.5%	31.9%	32.2%	34.1%	35.2%	36.7%	35.0%
% Landfill Diversion	80.3%	67.0%	75.9%	81.3%	81.6%	67.8%	54.8%

