



Construction, Demolition and Deconstruction Policy Toolkit

Presented by Recycle Colorado's C&D Council

Moderator: Cody Lillstrom, Boulder County



Jonathan
Wachtel

Sustainability Manager

City of Lakewood

Purpose: Divert reusable or recyclable materials generated by construction and demolition projects from landfills to reduce environmental impacts and advance Lakewood's waste diversion goals.

- Requirements for specific materials to be diverted from landfills (concrete, asphalt, untreated wood, metal, cardboard)
- Comprehensive waste management plans & compliance reporting
- Deposit and refund system





Tessa Dieter

*Senior Specialist,
Environmental
Compliance*

City of Fort Collins

Purpose: Divert reusable or recyclable materials generated by construction and demolition projects from landfills to reduce environmental impacts and advance Fort Collins' waste diversion and climate action goals.

- Requirements for specific materials to be diverted from landfills (concrete, asphalt, untreated wood, metal, cardboard)
- Comprehensive waste management plans & compliance reporting tied to building permit process
- Violations punishable by Citation or Court Summons





Emily Freeman

Policy Advisor, Circular Economy

City of Boulder

Purpose: Support Boulder's Energy Conservation Code and circular economy to reuse and recycle valuable and carbon intensive building materials.

- Create Sustainable Deconstruction Plan prior to applying for a demolition permit
- Divert 75% of materials, by weight, from landfill. Divert a minimum of 3 material types.
- Refundable deconstruction deposit of \$1/sf; \$1500 minimum and a \$219 non-refundable administrative fee





Michael Port

Climate Action Analyst

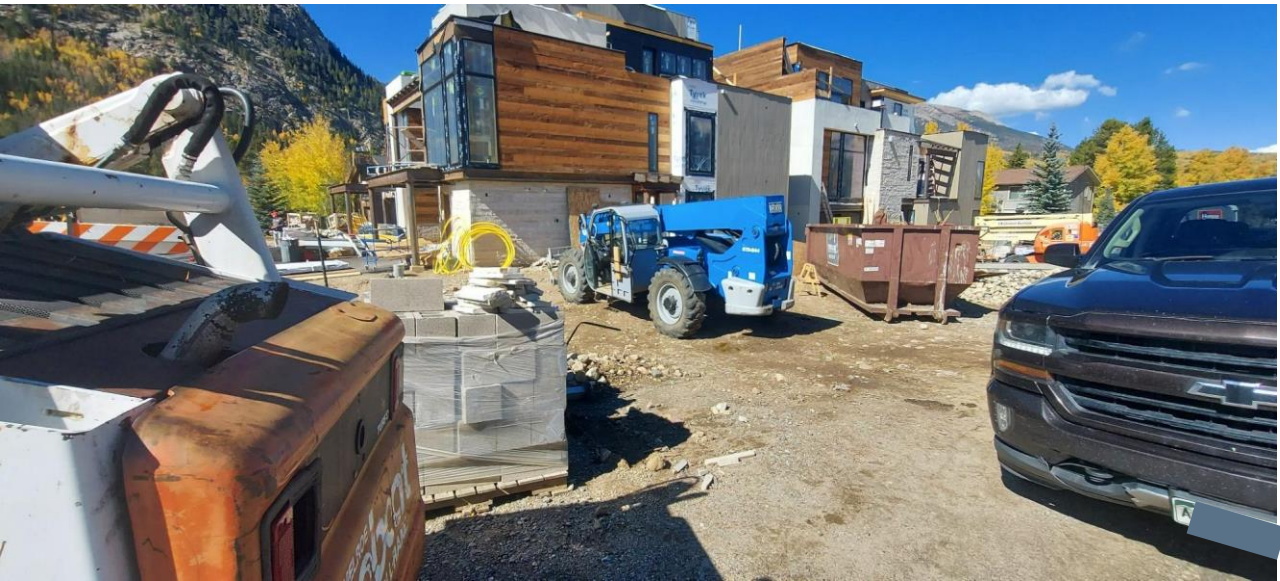
Pitkin County

Purpose: The construction industry is one of our biggest sources of landfilled materials and has significant diversion potential. Overarching purpose is to extend the life of the landfill.

- Requirements for specific materials to be diverted from the landfill and a 35% waste diversion goal for all projects
- Deposit-refund program applicable to new construction, demolition and remodels in unincorporated County
- Program only applies to ~20% of projects in the area



C&D Diversion in Colorado



C&D materials make up an estimated 25% of total waste generation statewide

Gaps in tracking, infrastructure and end markets, no state goals for diversion

FRWD grants going to C&D-related projects, Circular Economy Development Center planning to focus on this area

Local government policy starting to consider C&D to take advantage of environmental, social and economic benefits





2023

COLORADO CONSTRUCTION, DEMOLITION & DECONSTRUCTION

POLICY TOOLKIT



Know Your
Waste Stream

Know Your
Infrastructure

Policy
Framework

Planning and
Implementation

Other Policy
Considerations



Know Your Waste Stream & Infrastructure

1. Assess waste composition and local construction activity trends
2. Determine C&D materials with existing recycling or reuse systems
3. Work with local contractors and recyclers to map material flows to end markets and which materials have the highest diversion potential



Know Your Waste Stream & Infrastructure



craigslist



Materials & End Markets

What recoverable materials are in a building?

- Reuse and salvage materials
- Metal
- Wood (clean, untreated)
- Aggregates (asphalt, brick and concrete)
- Landfill

What must be landfilled?

- Gypsum / drywall
- Asphalt shingles



Mountain Infrastructure & End Markets



Recoverable Materials

(See [Prices](#) page for current pricing)



Concrete, Masonry, Brick & Porcelain

We accept concrete with and without rebar, porcelain (e.g. toilets, bathroom fixtures) and masonry, brick and natural stone with mortar. Materials attached to fath are not recyclable. These materials are converted to a crushed concrete product.



Asphalt

We accept clean asphalt for \$15/ton (2020 rate). The material is recycled through a crushing process and used onsite.



Clean Wood (Lumber + Pallets)

We accept only untreated and unpainted lumber and pallets for recycling. We cannot accept engineered woods such as particleboard, OSB, LSL, (e.g. TimberStrand) or glulam. Small amounts of metals, like nails, are acceptable. The material is shredded and converted into landscaping mulch.



Organics

We accept a variety of organic materials to process into our compost product. Acceptable materials resulting from C&D activities include branches and grass and leaves. There is a \$15 minimum charge for both types.



Rock and dirt

We accept clean screenable soil and clean rock & cover soil.



Scrap Metal

We accept ferrous and non-ferrous metals such as structural beams, flashing, piping, and electrical components. Scrap metal is melted down and converted into recycled metal products.



Cardboard

Cardboard packaging generated primarily during the interior finish phase of construction can be recycled at no cost. Please avoid recycling wet or otherwise contaminated cardboard.

Planning and Implementation

1. **Initial policy planning and stakeholder processes**
2. Staff training, new process development required depending on requirements
3. Compliance enforcement – tie requirements to permits, track receipts, fines
4. Utilize a tracking system
5. Methods to encourage diversion – waste management plans, education & outreach practices



Planning & Implementation Process

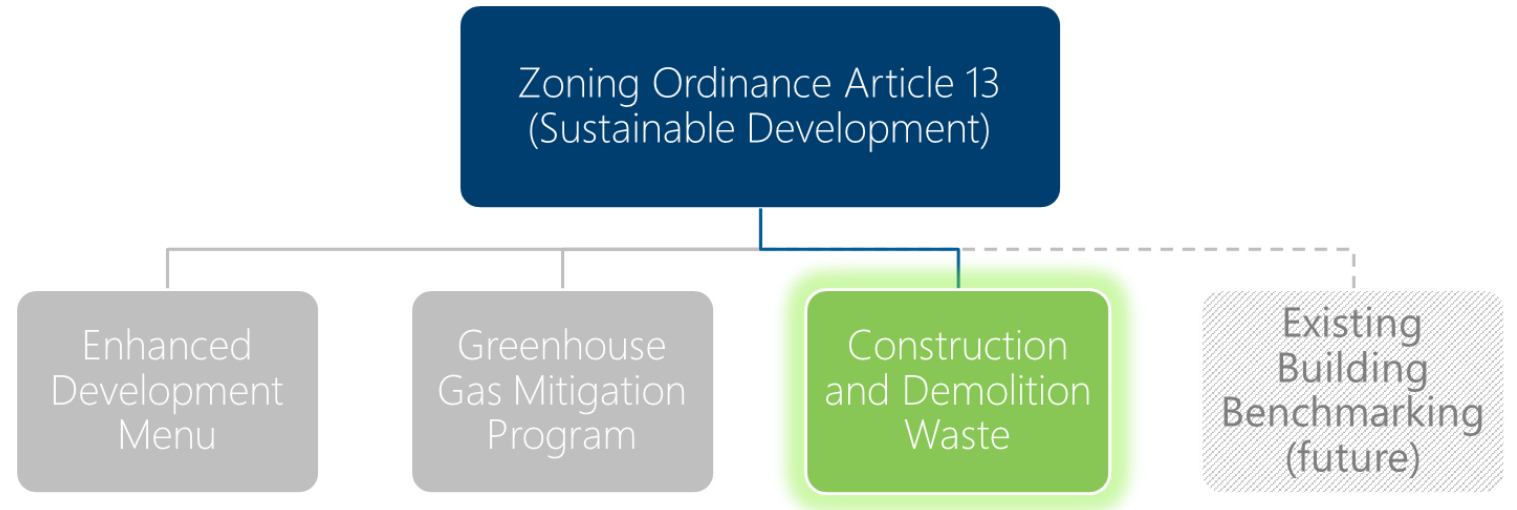


Requirements first adopted in Lakewood's **Building Code** in 2019.

Supplemental Standards added in the **Zoning Code** in 2022 to support compliance through enhanced planning support & deposit/refund system



Planning & Implementation Process



Supplemental Standards added in the **Zoning Code** as part of broader sustainable development standards



Planning & Implementation Process

Key Steps...

1. Call to action: adopted waste diversion goals & diversion target
2. Scan for potential locations within muni code
3. Define what success looks like (positive impact on community goals) & identify potential risks (admin burden, costs, compliance, politics)
4. Stakeholder engagement (included both internal and external working groups)
5. Model outcomes and adjust
6. Track what really happens & try to plug the gaps



Planning and Implementation

1. Initial policy planning and stakeholder processes
2. Staff training, new process development required depending on requirements
3. **Compliance enforcement – tie requirements to permits, track receipts, fines, staffing**
4. Utilize a tracking system
5. Methods to encourage diversion – waste management plans, education & outreach practices



Compliance & Enforcement

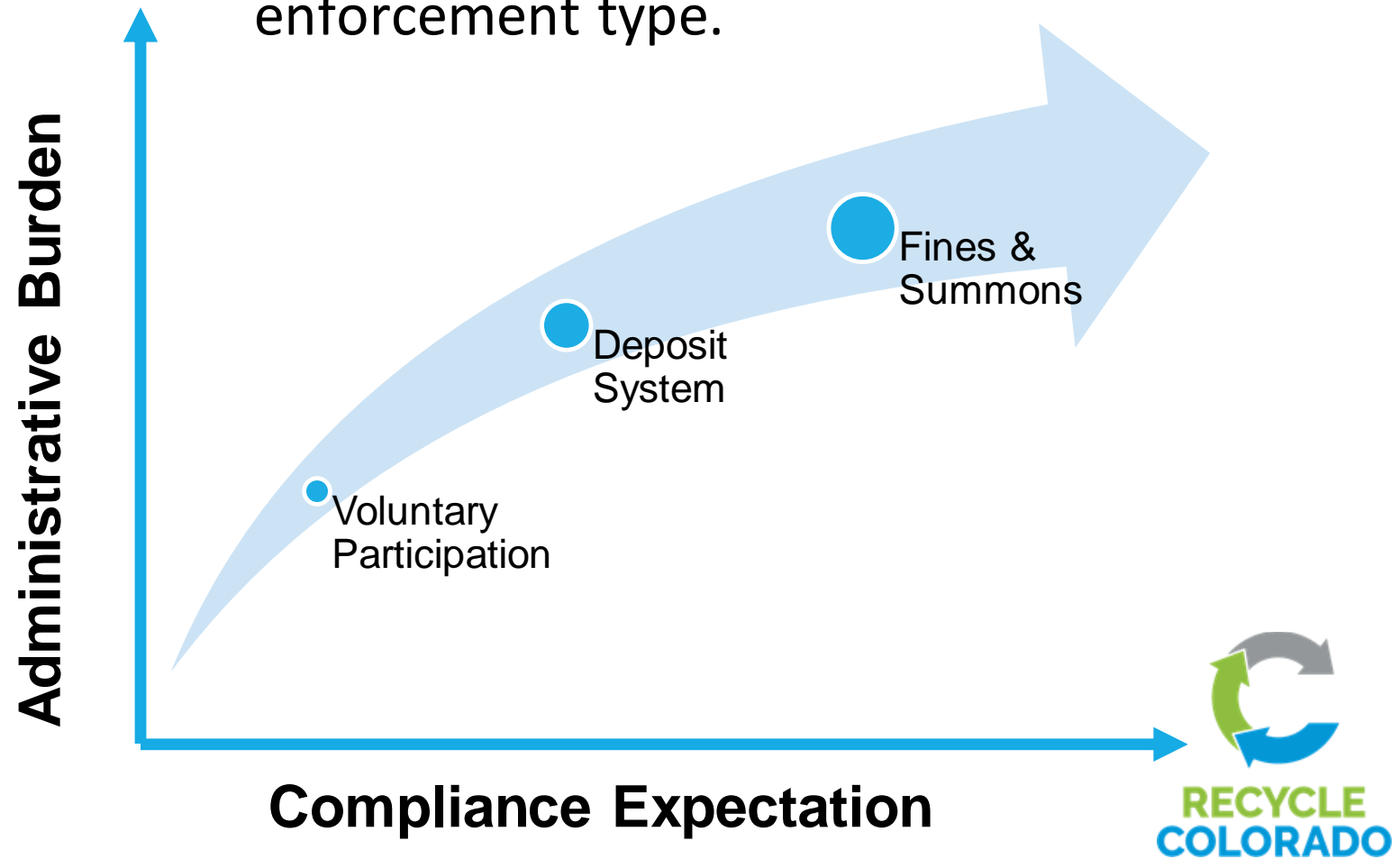


Designing policies with compliance improves the path to implementation

Compliance & Enforcement



Compliance mechanisms vary greatly in enforcement type.



Compliance & Enforcement

Key considerations:

1. Design ordinance language and policies with compliance in mind
2. Weigh administrative burden against compliance expectations
3. Prioritize voluntary compliance by way of educational outreach
4. Utilize performance monitoring and adjust policies accordingly



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Project tracking

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
	Application Date	Issue Date	Completion Year	Permit #	Address	Sq. Ft.	Year Built	Contractor	Contact Names	Email	Phone	Landfill	Recycling	Organics	Reuse	Diversion Total (lbs)	Total Project Weight (lbs)	Diversion % Achieved	Estimated Diversion (SDP)	Deconstruction Contractor	Notes
1																					
3	1/19/2023			DEM2023-00002	2340 Keller Farm Dr.	4,520	1987	GC?	Marc Daniels;	marcdaniels55@hotmail.com ;	303-549-1900;					0	0	#DIV/0!		TBD	Needs new version of SDP and emailed suggestions for deconstruction contractor. AG
4	2/1/2023			DEM2023-00003	2022 Hermosa Dr.											0	0	#DIV/0!			Applied but nothing submitted for CI review or signature yet (3/2/23)
6	2/3/2023	2/6/2023		DEM2023-00005																	SDP Signed 2.1.23 -AG
7	3/3/2023	4/12/2023		DEM2023-00014	640 Iris Ave.	2,122	1954	West BD, LLC	Dan Drury; Charelyn Park	dan@westbdllc.com ; billing@westbdllc.com ;	303-442-2383					0	0	#DIV/0!	78%	West BD LLC	Garage deconstruction - combined with SDP for DEM2023-00005 but had to pay \$480 separately. Link % achieved to eligible deposit refund amount.
8	2/8/2023			DEM2023-00006	2345 Panorama Ave.											0	0	#DIV/0!			Applied but nothing submitted for CI review or signature yet (3/2/23)
12	2/16/2023	3/3/2023		DEM2023-00010	1100 Balsam Ave.											0	0	#DIV/0!	75%	Ameresco / Colorado Cleanup Corporation	Remainder of Alpine Balsam Hospital deconstruction.
13	2/22/2023	3/14/2023		DEM2023-00011	1830 Cedar Ave.	264	1965	Factor Design Build	Amy Smith; Chris Doherty	amy@factordesigntobuild.com ; chrisdoherty@factordesign.com	303-872-3482; 720-737-1436					0	0	#DIV/0!	77%	Factor Design Build	Garage deconstruction; House is to remain.
	3/9/2023	3/10/2023		DEM2023-00015	770 Circle Dr.	8,011	1941	Tom Stanko	Tom Stanko; Kyle Plantico; Osteloi Investments	tom@harringtonstanko.com ; neil@igreppi.com	303-810-6292; 917-414-8993					0	0	#DIV/0!	91%	Tom Stanko	Full structure decon with attached garage. Signed and Emailed SDP 3/6/23 -AG



Planning and Implementation

1. Initial policy planning and stakeholder processes
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5. **Methods to encourage diversion – waste management plans, education & outreach practices**





City of Boulder Sustainable Deconstruction Plan

Required for full demolition permits and Level 4 Alterations (residential and commercial).

PURPOSE: Boulder is creating a zero-waste community. Projects are expected to deconstruct and properly manage building materials for landfill diversion. This plan establishes how the general contractor will manage the deconstruction materials recycling from the property. These requirements align with the 2020 City of Boulder Energy Conservation Code to reuse and recycle building materials.

REQUIREMENTS: 75% of this project's materials must be reused, donated, or recycled and a minimum of three material types (from the building structure) must be diverted from the landfill to comply with the city's ordinance. Weight tickets for all materials must be provided. Pictures and destinations/intended reuse must be provided for materials *without* weight tickets.

Applicant:	Date:
Property Address:	Phone:

PROJECT DESCRIPTION: Include all exterior alterations proposed for the property.

General Contractor:	Phone:
	Email:
Property Owner:	Phone:
	Email:
Building Type: <input type="checkbox"/> Single Family Detached <input type="checkbox"/> Single Family Attached <input type="checkbox"/> Multi-Family (Attached) <input type="checkbox"/> Commercial / Non-Residential	
Year Built:	Accessory Structure: Y/N _____
Full Structure Deconstruction – Y/N: _____ If yes, Deconstruction: _____ sq. ft.	
Level 4 Alteration (Building Permit) – Y/N: _____ If yes, Alteration/Remodel: _____ sq. ft.	
Project Description:	

DECONSTRUCTION ASSESSMENT:

Deconstruction Professional (self OK)	
Performs deconstruction evaluation and provides deconstruction waste recycling plan.	
Name:	Company Name:
Email:	Phone:
Signature:	Date:

Streamline Sustainable Deconstruction Plan Form

Aligned Building Type

Clear distinction

- Full Structure Deconstruction
- Level 4 Alteration (Building Permit)
 - “Complete gut”
 - Work area >50%
 - Mechanical & lighting systems substantially replaced
 - Substantial structural alteration
 - Includes fenestration replacement

Streamline Material Types

Where we came from

- “Asphalt, concrete & landscaping”
- “Asphalt, concrete & 1 metal patio table with 4 chairs”
- Cardboard
- Glass
- Plastics
- Roofing

Three material types

- No double counting + confusion
 - Appliances – Donation – Metal
 - Mattresses – Donation



Streamline Material Types

Consolidate material categories

- From 17 to 7
- Inconsistent reporting

How do I estimate the weights?

- Experienced deconstruction contractor
- Resource Central
- EPA volumetric weight estimator

Red flags

- Unreasonably high weights
- Incorrect destinations
- < 75% diversion
- Diversion > Total
- < 3 material types

Permit No. _____

ESTIMATED DIVERSION: Complete the table below by estimating the diversion rate for this project by indicating the material types and estimated weights (in pounds) of building materials that you plan to reuse or recycle. This project must achieve a diversion rate of 75% by weight, including aggregates and divert at least three (3) different material types from the building structure itself to comply with the ordinance requirements.

Material Type (3+ material types from the building structure must be diverted from the landfill)	Estimated Pounds (lbs) Diverted (Reuse / Recycle)	Intended Material Destination (e.g., name of aggregate recycler, BCRC, CHaRM, Craigslist, on-site, scrap metal, Western Disposal, etc. *)
Aggregates (asphalt; concrete; masonry: bricks; ceramics/porcelain); for recycling		
Electronics (for recycling only)		
Landscape Material (boulders/rocks/stone, dirt, pavers, shrubs, trees, yard waste, etc.)		
Metal (appliances, copper, corrugated metal, scrap, copper, steel, etc.; for recycling, not reuse)		
Other ¹ : _____ (write in for consideration)		
Salvage Material for Donation/Reuse (appliances, bricks, cabinets, carpet squares, ceiling tiles, doors, electronics, fixtures, flooring, metal, sinks, toilets, windows, wood – structural for reuse, windows, etc.)		
Structural Wood (for organics mulch only; not reuse)		
	=	Total Pounds (lbs) Diverted (Reuse/Recycle)
	÷	Total Pounds (lbs) Project Waste (Estimate)
	%	Diversion Rate

¹ Any other materials that come up during deconstruction that the contractor would like to have considered to be included in the project diversion, must be approved by the City of Boulder. Please contact CDWastePermits@bouldercolorado.gov.

Notes in parenthesis are examples; others may exist. If you have questions regarding any materials for reuse, recycling or the three (3) building material requirement, please contact CDWastePermits@bouldercolorado.gov before proceeding.

Education & Outreach

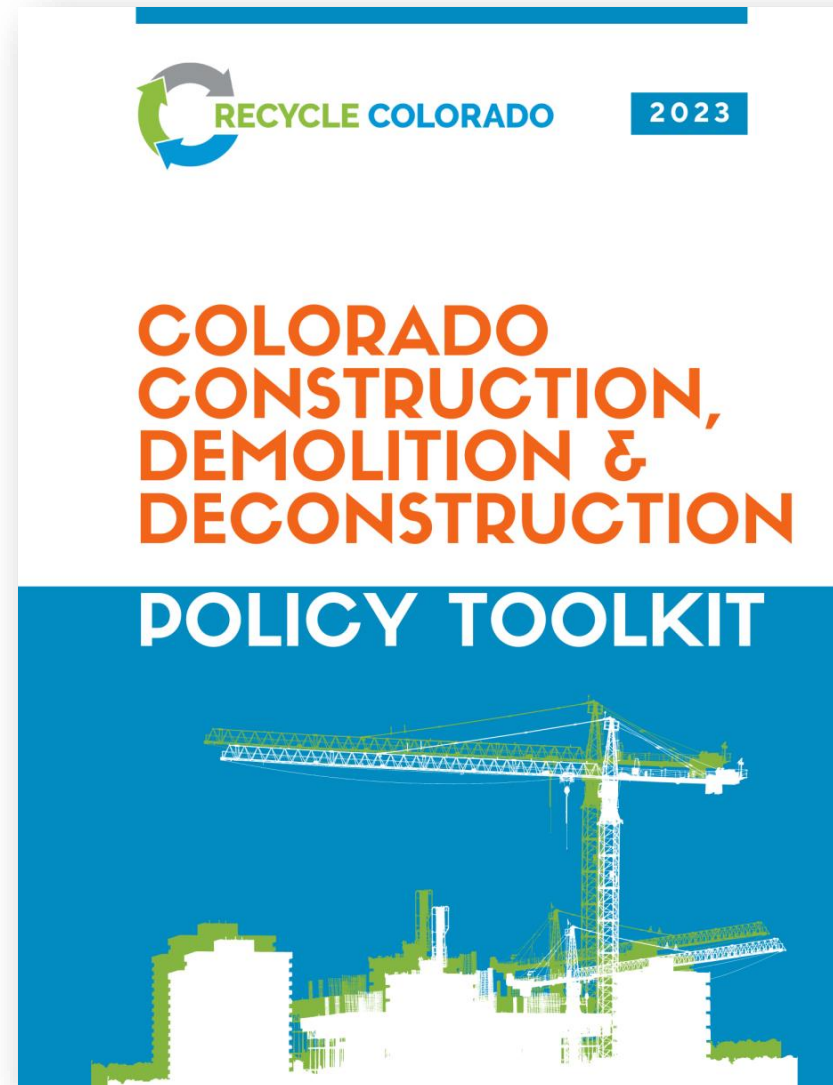
Promote best practices

Educate on recyclable vs non-recyclable materials

Collect qualitative data on local building practices



Reflections, Lessons Learned Q&A



Thank You

Project Contributors

Ryan Call, EcoCycle

Winn Cowman, Yampa Valley Sustainability Council

Tessa Dieter, City of Fort Collins

Mellik Gorton, Colorado Department of Public Health & Environment

Allie Flynn, High Country Conservation Center

Emily Freeman, City of Boulder

Amelia Kovacs, Walking Mountains Science Center

Caitlin Haselbalg Long, City of Lakewood

Anna Perks, Perks Deconstruction,

Michael Port, Pitkin County Solid Waste Center

Kathryn Slaughter, VertSites LLC

Jonathan Wachtel, City of Lakewood

Emily Wilson, GreenSheen

Download a draft version of the report and provide feedback

www.recyclecolorado.org/c-d-council



Summit for Recycling – Steamboat Springs, Colorado – May 22-23, 2023