Boulder County Resource Conservation Advisory Board (RCAB) Meeting
April 27, 2016

Boulder County Recycling Center, 1901 63rd St, Boulder CO

AGENDA

1. Call to Order / Introductions	4:45 p.m.
2. Approval of Minutes Feb 24, 2016	4:50 p.m.
3. Intro - new board members	4:55 p.m.
4. Public Comment and Community Reports – please come with a 2 minute update on what your community is working on/exciting updates	5:10 p.m.
5. Special Topic: Carbon Sequestration: Elizabeth Black will give a presentation on soil carbon sequestration	5:20 p.m.
6. Special Topic: Carbon Sequestration: Tim Plass will talk about carbon credits and models from other communities	6:00 p.m.
7. Special Topic: Re-Trac: David Bebak will give an update on the new software, and community benefits	6:15 p.m.
8. Adjourn	6:30 p.m.

Resource Conservation Advisory Board (RCAB)

The Resource Conservation Advisory Board (RCAB) was formed in 2002 to advise the Board of County Commissioners on major waste diversion policies and strategies.

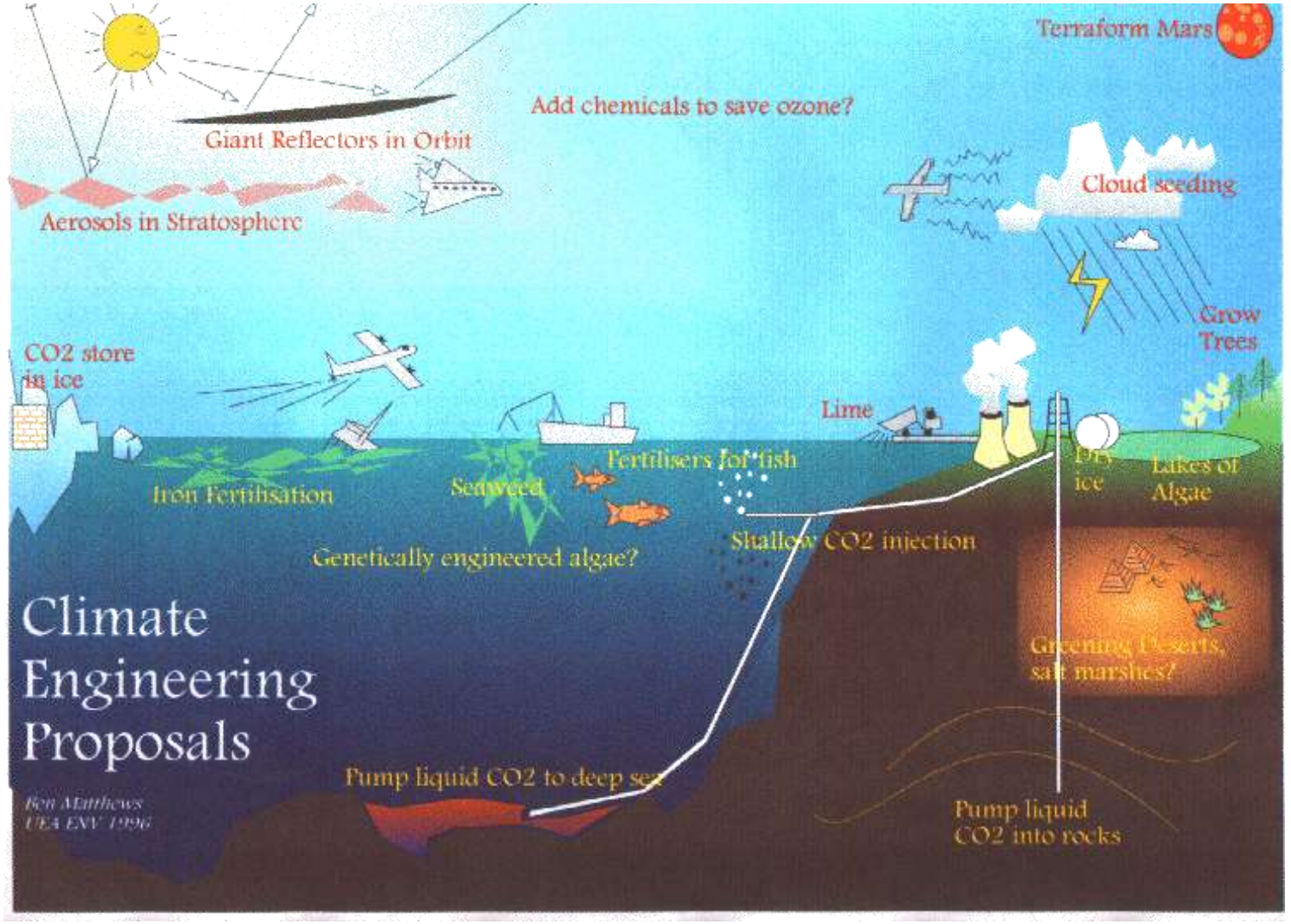
The purpose of the Advisory Board shall be to assist the Board of County Commissioners in reducing the amount and toxicity of waste generated in the county; to research, review and recommend changes in policy related to waste reduction, reuse, recycling and composting; to provide input on the development and management of facilities and programs; and as a result of these efforts to help Boulder County and its communities and partners to conserve mineral, fossil fuel and forest resources, and to reduce environmental pollution.

A successful carbon-loss program for our planet:

EMIT LESS PLUS **SEQUESTER MORE**

(DIET PLUS **EXERCISE!)**

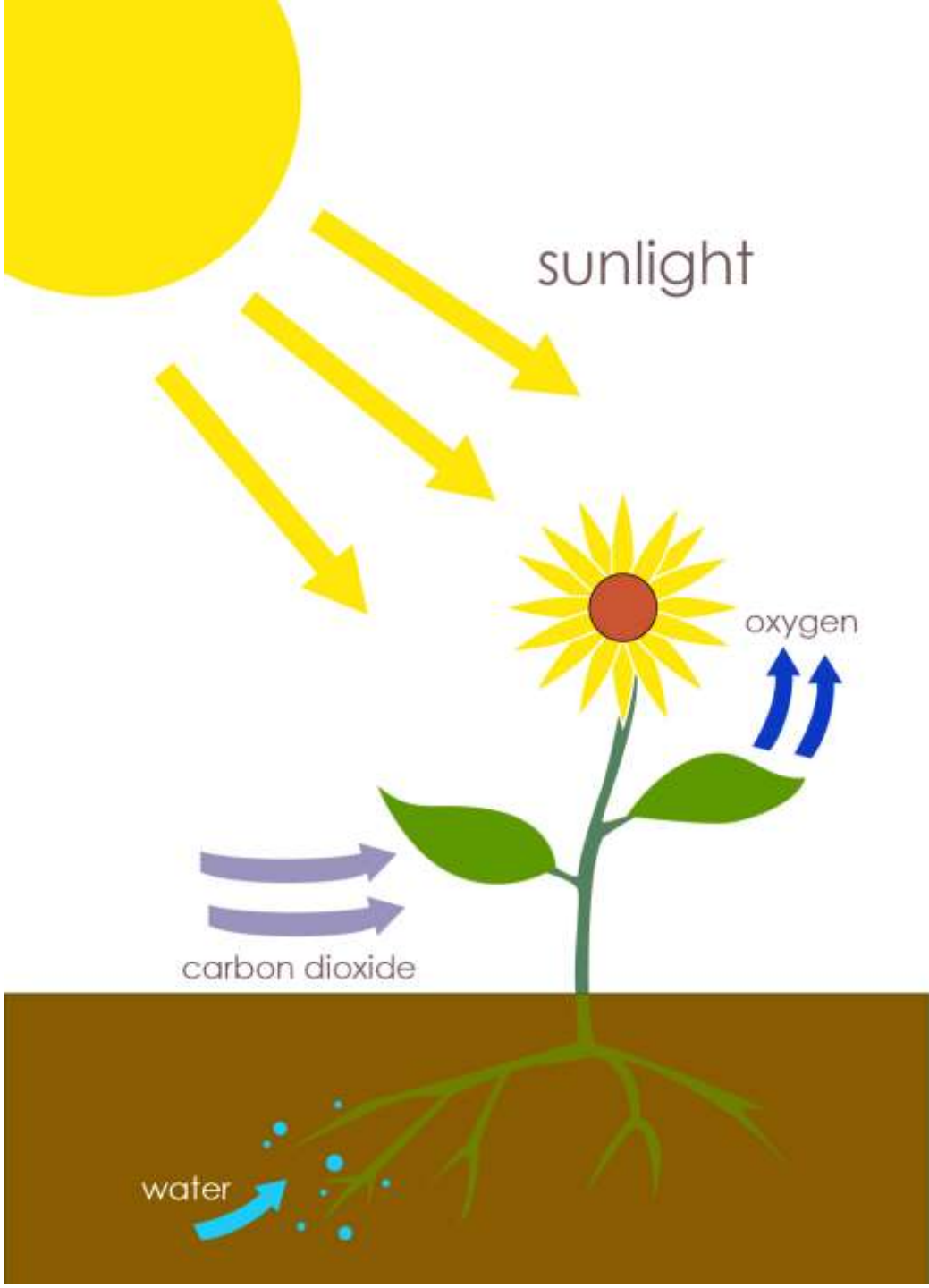
There are some scary ideas for how to sequester carbon!

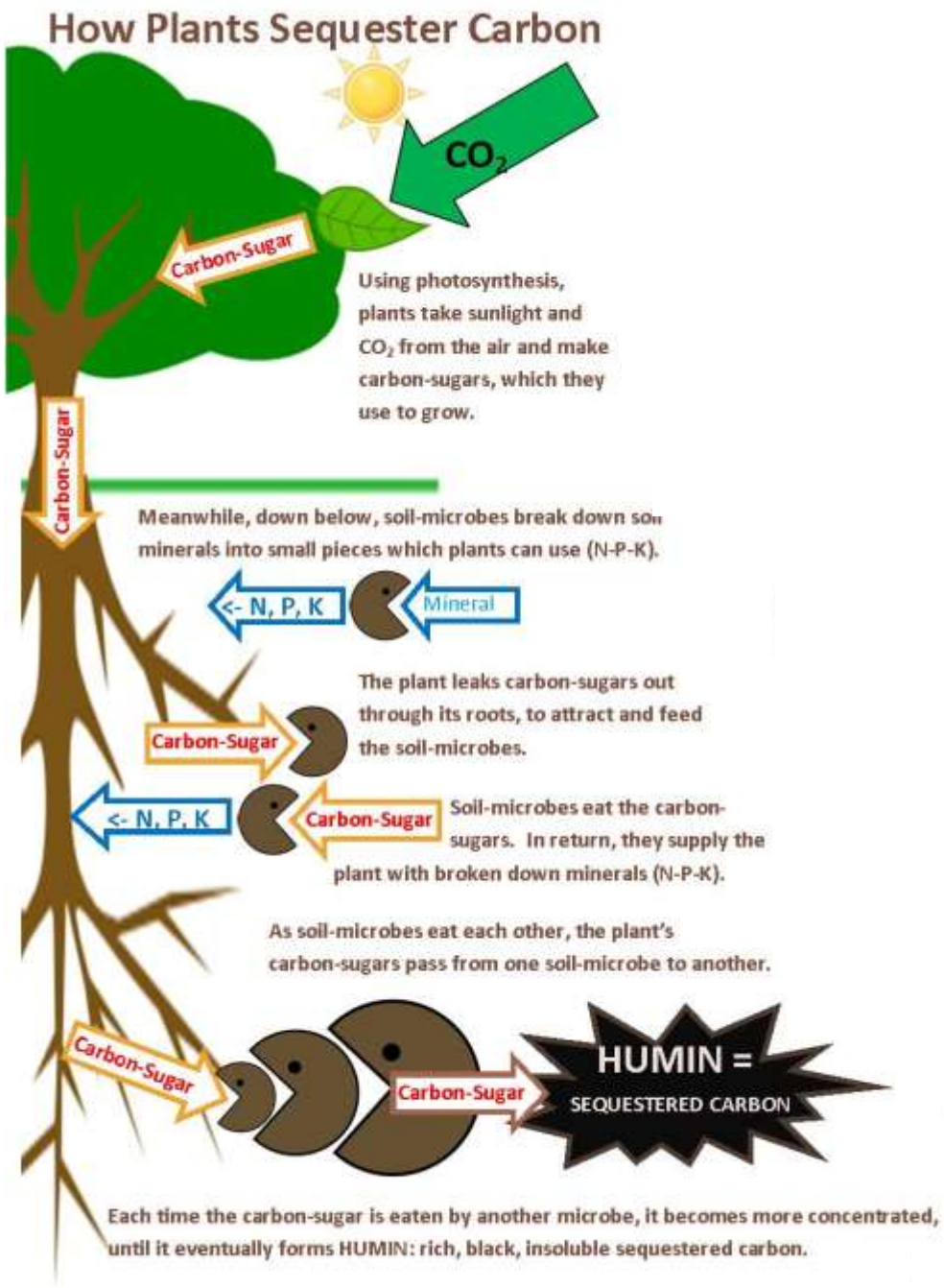


Let’s try a non-scary, tried-and-true method:

PHOTOSYNTHESIS!

(The most powerful engine on earth!)



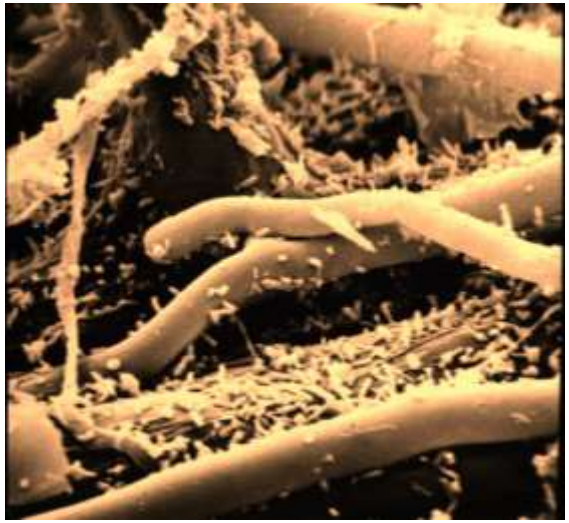


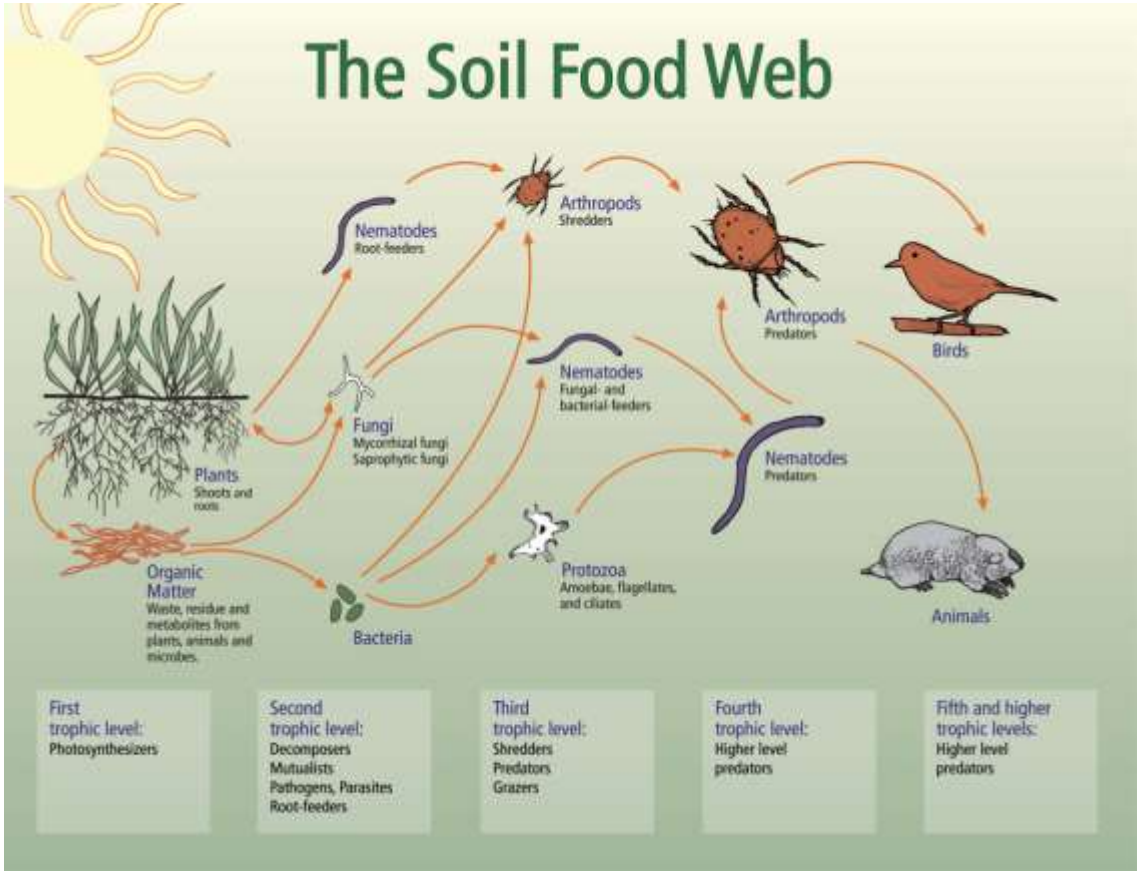
What you probably DIDN'T learn about photosynthesis.

N, P, K = Nitrogen, Phosphorus, Potassium

A spoonful of healthy soil holds

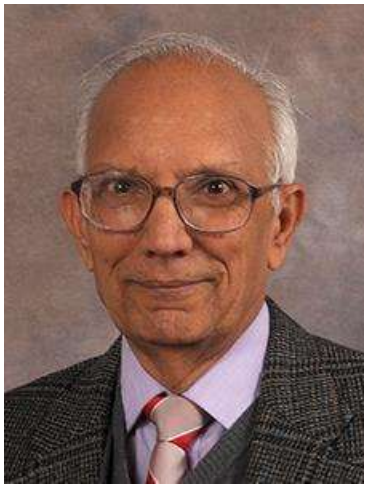
- 4 billion bacteria
- 2000 yards of fungal filaments
- 400,000 protozoa
- 2000 nematodes
- 1000 arthropods
- worms & algae





"You are not standing upon the soil.
You are standing on the roof of another world."

How much carbon can our microbes sequester?



- "Agricultural land in the United States has the capacity to sequester about 650 million metric tons of carbon dioxide (CO_2) every year, offsetting up to 11 % of U.S. greenhouse gas (GHG) emissions annually." Lal

- "The rates of biomass production we are currently observing in this system have the capability to capture enough CO_2 (50 tons CO_2/acre) to offset all anthropogenic CO_2 emissions on less than 11% of world cropland. Over twice this amount of land is fallow at any time worldwide." Johnson

How can we help our soil microbes sequester more carbon?

Feed soil microbes,

All kinds of stuff,

All year-round.

How have we hindered our soil microbes?

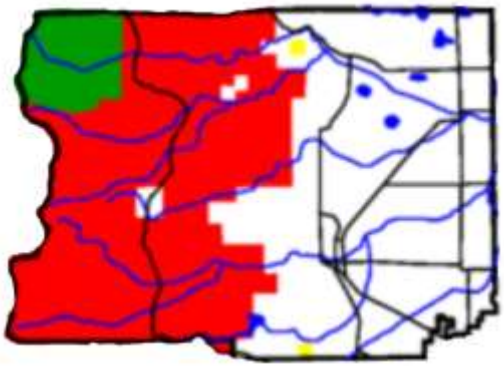
"A nation that destroys its soil destroys itself." Franklin D Roosevelt

Where's the research?

Agency	Focus	Location
NRCS (Natural Resources Conservation Service), part of USDA	Improving "Soil Health" Managing Soil Carbon and Soil Organic Material	Country-wide
Rodale Institute	30 year Farming Systems Trial Compares organic and conventional farming systems	Pennsylvania
Rattan Lal, Ohio State University's *Carbon* Management and *Sequestration* Center	Reducing CO_2 levels through sustainable agriculture Focuses on the big international picture	Ohio
Marin Carbon Project	Rangeland management to sequester carbon	Bay-area, California
Quivira Coalition	Carbon ranching Restoring degraded watersheds and rangelands	New Mexico
Colorado State University	The COMET Farm tool Soil research	Fort Collins
David C Johnson, New Mexico State Suniversity	No-turn composting Increasing fungal soil communities	Albuquerque

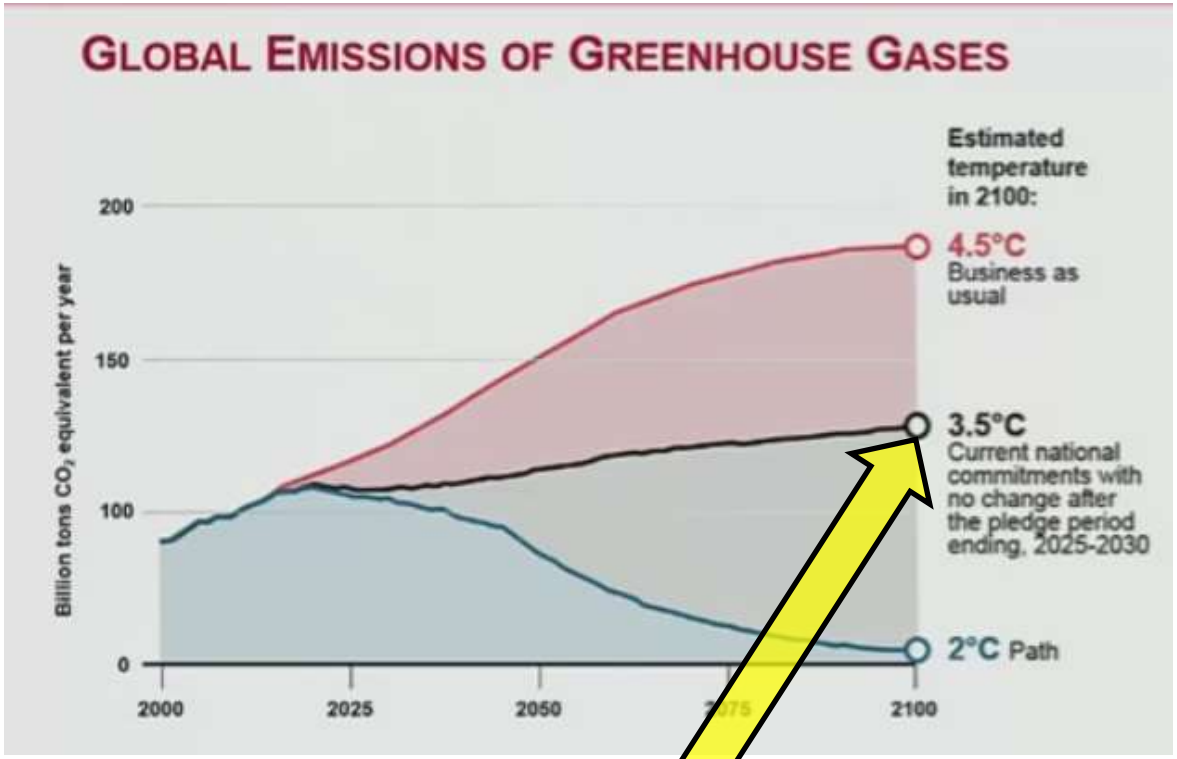
How Can We Sequester more Carbon in Boulder County?

Most of our County is NOT agricultural lands.



USFS & NPS lands, Boulder County

- Biggest percentage is forest
- Second biggest is rangeland
- Smallest chunk is agricultural



In 84 years

BOULDER = ALBUQUERQUE

Reforestation post-burn

Mob-grazing

Conservation Crop Rotation

Cover Crop Cocktails

No-Till/Strip-Till

Agency	Focus
Marin Carbon Project	Rangeland management to sequester carbon

50% increase of forage and .4 ton/acre carbon sequestered.

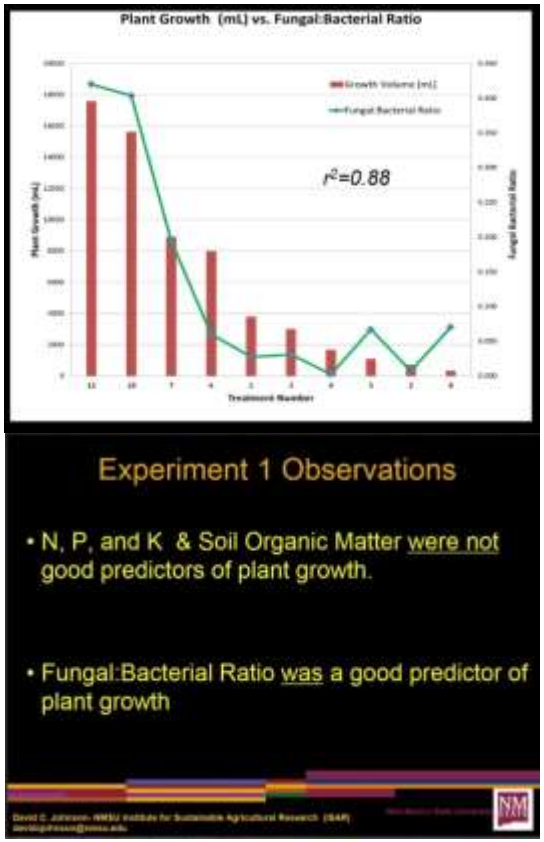
Green Waste Compost

- **Green waste compost** is made largely from municipal garden waste. It can be composted on the farm where it is used, or at a centralized facility. It is spread on the surface of the field and sometimes tilled in.

No- Turn Compost

Agency	Focus
David C Johnson, NMSU	Increasing fungal soil communities No-turn composting

Biologically Enhanced Agricultural Management (BEAM)



Wood waste to biochar/mulch

Biochar

- **Biochar** uses pyrolysis to create a solid residue resembling charcoal. Organic waste is burned anaerobically, creating oil, syngas, and biochar. Burying biochar reduces CO2 in the atmosphere, because it prevents the organic waste from decaying and releasing CO2, as it would otherwise.

There's hope for a skinny low-carbon future!

Get some exercise
so you can eat cupcakes!

Sequester some carbon
so you can emit some CO_2!

Questions? Elizabeth@ElizabethBlackArt.com The End

Re-TRAC Connect – Waste Reporting Software Cost Sharing

David Bebak, Leigh Cushing
Boulder County Resource Conservation Division

April 27, 2016

Report

- Reports

Diversion Rate Report

GHG Report

ANALYTICS

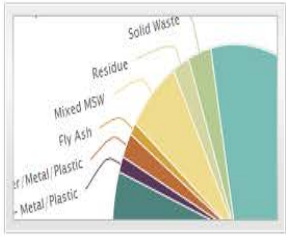
Program: BOULDER (COLORADO) ANNUAL REPORT

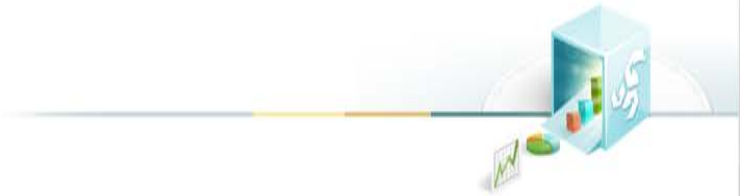
This section enables me to:

- Instantly generate valuable reports.
- Efficiently measure my data, and monitor trends, to enhance program performance and waste diversion.

To begin:

- Click a report type from the sidebar to quickly generate analytical reports.





Report

- Reports
  - Diversion Rate Report
  - GHG Report

DIVERSION RATE REPORT

Program: BOULDER (COLORADO) ANNUAL REPORT

Year

2015

Community:

Select None | Select All

- [x] City of Boulder
- [ ] City of Lafayette
- [ ] City of Longmont
- [ ] City of Louisville

Group By:

Material Category

Member:

All Haulers

Generate Report

Export as: CSV XLS

Diversion Report

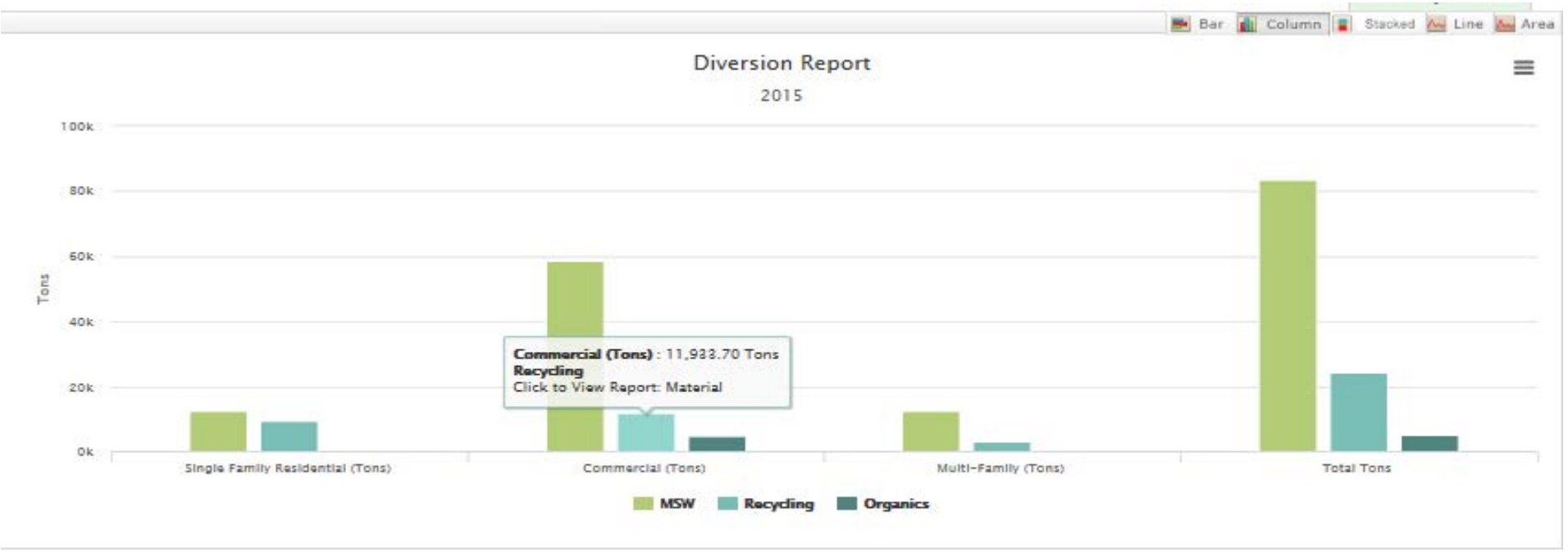
2019

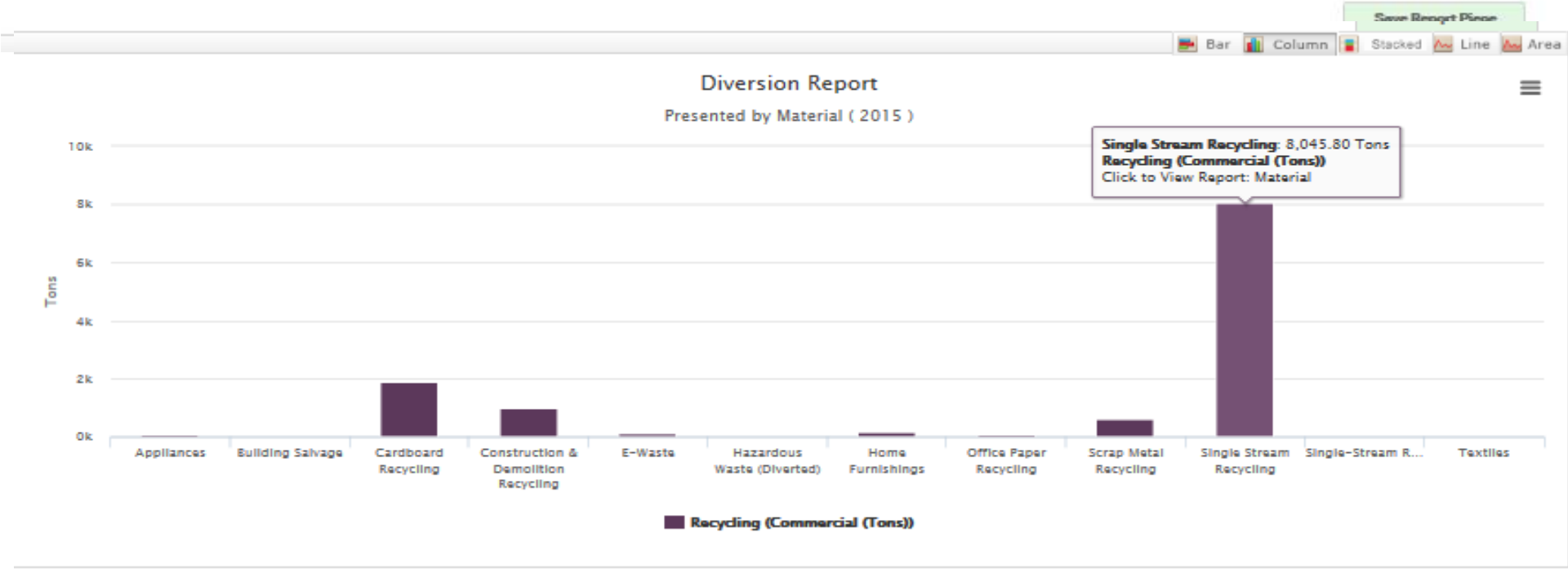
Materials	Single Family Residential (Tons)	Commercial (Tons)	Multi-Family (Tons)	Total Tons	% of Category
MSW					
Landfill	12,610.9	58,581.5	12,331.9	83,524.0	100.0
Hazardous Waste (Disposed)	0	0		0	0
MSW Total	*12,610.9*	*58,581.5*	*12,331.9*	*83,524.0*	*N/A*
% of All Sectors	*56.9*	*77.9*	*80.5*	*74.1*	*N/A*
Recycling					
Appliances	156.7	59.8	2.4	218.8	0.9
Building Salvage	1,398.1	0.8	0.4	1,399.3	5.6
Cardboard Recycling	0	1,891.1	0	1,891.1	7.6
Construction & Demolition Recycling	6.0	910.7	0	916.7	4.0
E-Waste	270.1	112.9	1.0	383.9	1.6
Hazardous Waste (Diverted)	0	0		0	0
Home Furnishings	53.8	160.5	4.2	218.6	0.9
Office Paper Recycling		91.3		91.3	0.4
Scrap Metal Recycling	503.9	583.8	7.4	1,095.1	4.5
Single Stream Recycling	6,940.2	8,045.8	2,920.5	17,906.4	73.8
Single-Stream Recycling/Cardboard	51.3	14.8		66.1	0.3
Textiles	14.5	2.4	0.1	16.8	0.1
Recycling Total	*9,304.9*	*11,053.7*	*2,935.0*	*24,054.0*	*N/A*
% of All Sectors	*42.4*	*15.0*	*19.1*	*21.5*	*N/A*
Organics					
Yard Waste & Wood Waste Recycling	36.5	808.8	0	845.3	17.0
Compost	115.1	3,803.8	97.3	4,116.1	83.0
Organics Total	*151.5*	*4,702.6*	*97.3*	*4,961.4*	*N/A*
% of All Sectors	*0.7*	*6.3*	*0.6*	*4.4*	*N/A*
Grand Total	*22,196.8*	*75,337.6*	*15,365.1*	*113,740.5*	*N/A*
TOTAL Diversion	43.1	22.1	19.7	25.9	N/A

Diversion Report

2015

Materials	Single Family Residential (Tons)	Commercial (Tons)	Multi-Family (Tons)	Total Tons	% of Category
MSW					
Landfill	12610.9	58581.3	12331.9	83524	100
Hazardous Waste (Disposed)	0	0		0	0
MSW Total	**12610.9**	**58581.3**	**12331.9**	**83524**	**N/A**
% of All Sectors	**56.9**	**77.9**	**80.3**	**74.1**	**N/A**
Recycling					
Appliances	156.7	59.8	2.4	218.8	0.9
Building Salvage	1398.1	0.8	0.4	1399.3	5.8
Cardboard Recycling	0	1891.1	0	1891.1	7.8
Construction & Demolition Recycling	6	970.7	0	976.7	4
E-Waste	270.1	112.9	1	383.9	1.6
Hazardous Waste (Diverted)	0	0		0	0
Home Furnishings	53.8	160.5	4.2	218.6	0.9
Office Paper Recycling		91.3		91.3	0.4
Scrap Metal Recycling	503.9	583.8	7.4	1095.1	4.5
Single Stream Recycling	6940.2	8045.8	2920.5	17906.4	73.8
Single-Stream Recycling/Cardboard	51.3	14.8		66.1	0.3
Textiles	14.3	2.4	0.2	16.8	0.1
Recycling Total	**9394.3**	**11933.7**	**2935.9**	**24264**	**N/A**
% of All Sectors	**42.4**	**15.9**	**19.1**	**21.5**	**N/A**
Organics					
Yard Waste & Wood Waste Recycling	36.5	808.8	0	845.3	17
Compost	115.1	3903.8	97.3	4116.1	83
Organics Total	**151.5**	**4712.6**	**97.3**	**4961.4**	**N/A**
% of All Sectors	**0.7**	**6.3**	**0.6**	**4.4**	**N/A**
Grand Total	**22156.8**	**75227.6**	**15365.1**	**112749.5**	**N/A**
TOTAL Diversion	**43.1**	**22.1**	**19.7**	**25.9**	**N/A**


Bar
Column
Stacked
Line
Area
Diversion Report
2015
100k
80k
60k
40k
20k
0k
Tons
Commercial (Tons) : 11,933.70 Tons
Recycling
Click to View Report: Material
Single Family Residential (Tons)
Commercial (Tons)
Multi-Family (Tons)
Total Tons
MSW
Recycling
Organics

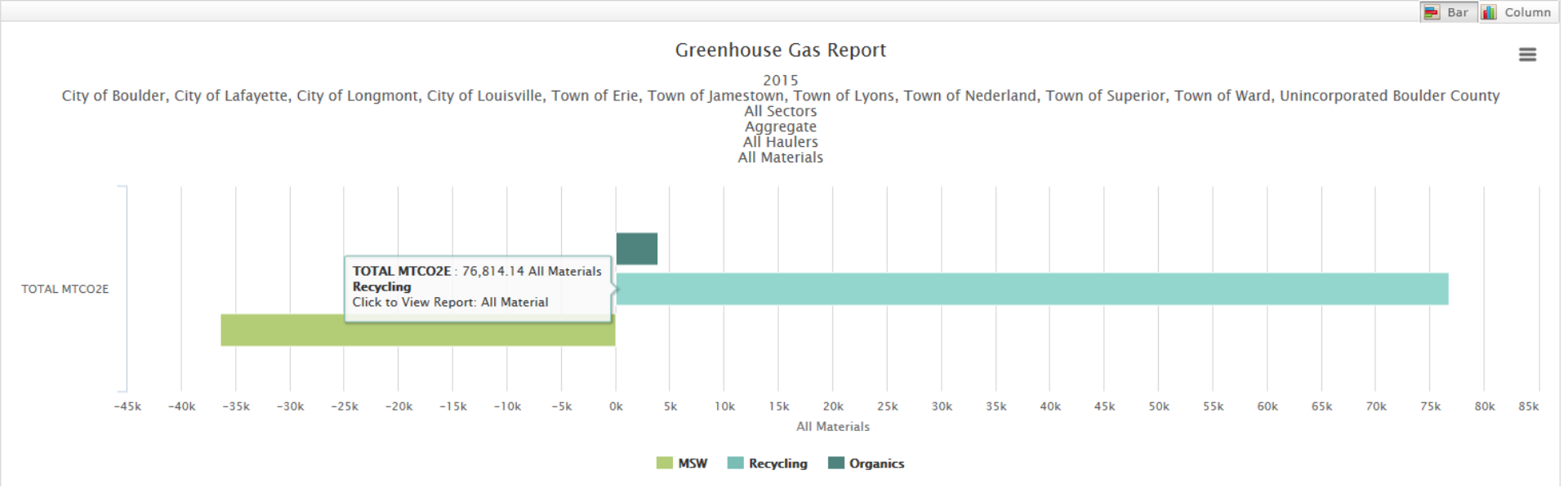

Bar
Column
Stacked
Line
Area
Diversion Report
Presented by Material (2015)
10k
8k
6k
4k
2k
0k
Tons
Single Stream Recycling: 8,045.80 Tons
Recycling (Commercial (Tons))
Click to View Report: Material
Appliances
Building Salvage
Cardboard Recycling
Construction & Demolition Recycling
E-Waste
Hazardous Waste (Diverted)
Home Furnishings
Office Paper Recycling
Scrap Metal Recycling
Single Stream Recycling
Single-Stream R...
Textiles
Recycling (Commercial (Tons))

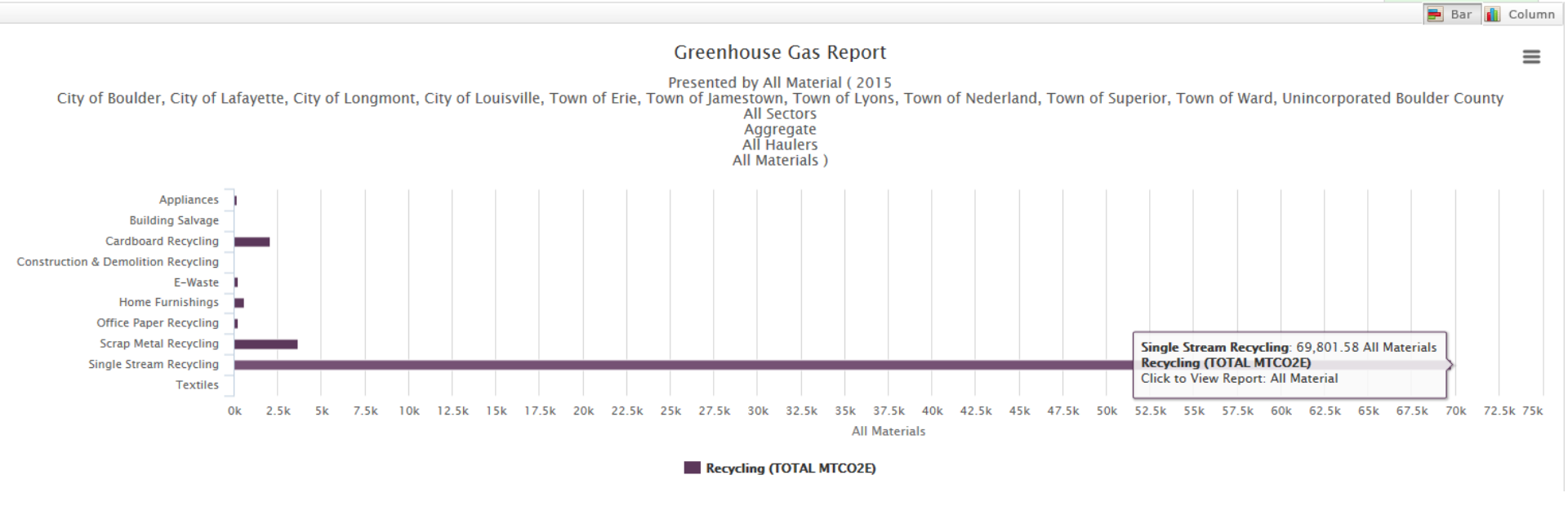
Export as: CSV XLS

Greenhouse Gas Report

2015
City of Boulder, City of Lafayette, City of Longmont, City of Louisville, Town of Erie, Town of Jamestown, Town of Lyons, Town of Nederland, Town of Superior, Town of Ward, Unincorporated Boulder County
All Sectors
Aggregate
All Haulers
All Materials

All Materials	*% of Category*	*TOTAL MTCO2E*
MSW		
Landfill	100.00	-36,435.17
MSW Total MTCO2E	*100.00*	*-36,435.17*
Recycling		
Appliances	0.20	150.04
Building Salvage	0	0
Cardboard Recycling	2.70	2,072.02
Construction & Demolition Recycling	0.01	11.52
E-Waste	0.32	242.40
Home Furnishings	0.75	576.14
Office Paper Recycling	0.34	260.95
Scrap Metal Recycling	4.82	3,699.49
Single Stream Recycling	90.87	69,801.58
Textiles	0	0
Recycling Total MTCO2E	*100.00*	*76,814.14*
Organics		
Yard Waste & Wood Waste	35.14	1,375.65
Compost	64.86	2,539.38
Organics Total MTCO2E	*100.00*	*3,915.03*
Grand Total MTCO2E	Not Applicable	44,294.00


Bar
Column
Greenhouse Gas Report
2015
City of Boulder, City of Lafayette, City of Longmont, City of Louisville, Town of Erie, Town of Jamestown, Town of Lyons, Town of Nederland, Town of Superior, Town of Ward, Unincorporated Boulder County
All Sectors
Aggregate
All Haulers
All Materials
TOTAL MTCO2E
TOTAL MTCO2E : 76,814.14 All Materials
Recycling
Click to View Report: All Material
-45k -40k -35k -30k -25k -20k -15k -10k -5k 0k 5k 10k 15k 20k 25k 30k 35k 40k 45k 50k 55k 60k 65k 70k 75k 80k 85k
All Materials
MSW
Recycling
Organics


Bar
Column
Greenhouse Gas Report
Presented by All Material (2015
City of Boulder, City of Lafayette, City of Longmont, City of Louisville, Town of Erie, Town of Jamestown, Town of Lyons, Town of Nederland, Town of Superior, Town of Ward, Unincorporated Boulder County
All Sectors
Aggregate
All Haulers
All Materials)
Appliances
Building Salvage
Cardboard Recycling
Construction & Demolition Recycling
E-Waste
Home Furnishings
Office Paper Recycling
Scrap Metal Recycling
Single Stream Recycling
Textiles
Single Stream Recycling: 69,801.58 All Materials
Recycling (TOTAL MTCO2E)
Click to View Report: All Material
0k 2.5k 5k 7.5k 10k 12.5k 15k 17.5k 20k 22.5k 25k 27.5k 30k 32.5k 35k 37.5k 40k 42.5k 45k 47.5k 50k 52.5k 55k 57.5k 60k 62.5k 65k 67.5k 70k 72.5k 75k
All Materials
Recycling (TOTAL MTCO2E)

Export as: CSV XLS

Greenhouse Gas Report

2015
City of Boulder
All Sectors
Aggregate
All Haulers
All Materials

All Materials	% of Category	TOTAL MTCO2E
MSW		
Landfill	100.00	-24,176.41
MSW Total MTCO2E	*100.00*	*-24,176.41*
Recycling		
Appliances	0.21	118.15
Building Salvage	0	0
Cardboard Recycling	3.44	1,920.63
Construction & Demolition Recycling	0.01	7.76
E-Waste	0.20	113.83
Home Furnishings	0.94	525.13
Office Paper Recycling	0.47	260.95
Scrap Metal Recycling	4.34	2,428.36
Single Stream Recycling	90.39	50,535.78
Textiles	0	0
Recycling Total MTCO2E	*100.00*	*55,910.60*
Organics		
Yard Waste & Wood Waste	2.89	25.42
Compost	97.11	855.19
Organics Total MTCO2E	*100.00*	*880.61*
Grand Total MTCO2E	Not Applicable	32,614.79

Greenhouse Gas Report

2015
City of Boulder
All Sectors
Aggregate
All Haulers
All Materials

All Materials	% of Category	TOTAL MTCO2E
MSW		
Landfill	100	-24176.41
MSW Total MTCO2E	**100**	**-24176.41**
Recycling		
Appliances	0.21	118.15
Building Salvage	0	0
Cardboard Recycling	3.44	1920.63
Construction & Demolition Recycling	0.01	7.76
E-Waste	0.2	113.83
Home Furnishings	0.94	525.13
Office Paper Recycling	0.47	260.95
Scrap Metal Recycling	4.34	2428.36
Single Stream Recycling	90.39	50535.78
Textiles	0	0
Recycling Total MTCO2E	**100**	**55910.6**
Organics		
Yard Waste & Wood Waste	2.89	25.42
Compost	97.11	855.19
Organics Total MTCO2E	**100**	**880.61**
Grand Total MTCO2E	**Not Applicable**	**32614.79**

2016 Costs:

Subscription Renewal Fee (annual)	**Dedicated Hours Included**	**Cost**
Re-TRAC Connect Leader Basic Account Software License	n/a	$2,076.00
Professional Services	9	$1,125.00
Technical Support	4.5	$405.00
Total Renewal Year Subscription Fee	$3,606.00	

- Current renewal fee is split between Boulder County and City of Boulder 50/50= **$1,830/ Year**
- Current renewal fee includes an additional 4.5 hours for technical support which may not be required for continued software use.
- In addition to City of Boulder and Boulder County already using ReTRAC, the following communities are also set-up in Re-Trac: Lafayette, Longmont, Louisville, Erie, Jamestown, Lyons, Nederland, Superior, Ward.
- Assuming all communities participated: **$3,606/11= $328.00**
- **Boulder County and the City of Boulder invested 14k(+) in development of the tool and will absorb these costs.**

Thank You