



The Future of Recycling & Waste Diversion within a Circular Economy Framework

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What'd'ya mean I have to learn another new term!?

...Scrap, Salvage, Recycling, 4Rs

(Reduce, Reuse, Recycle, Recover),

Waste Reduction, Waste Minimization,

Waste Diversion, Environmental

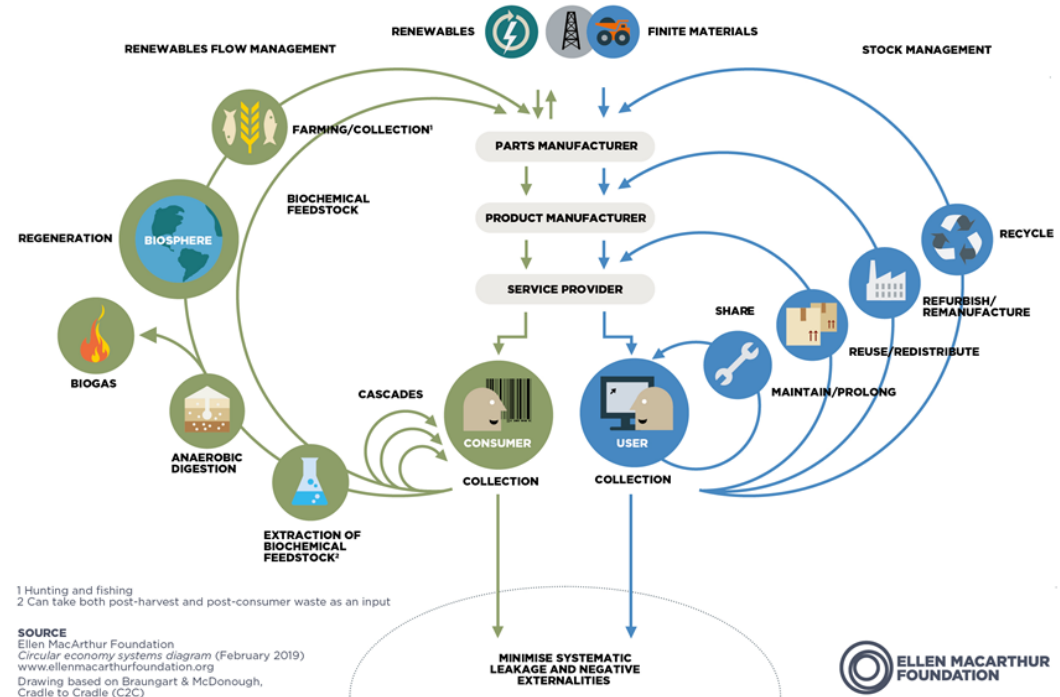
Sustainability, Sustainable

Development, Product Stewardship,

Zero Waste, Extended Producer

Responsibility...and now...

...Circular Economy



The Linear Economy – Take, Make, Waste

TAKE



MAKE

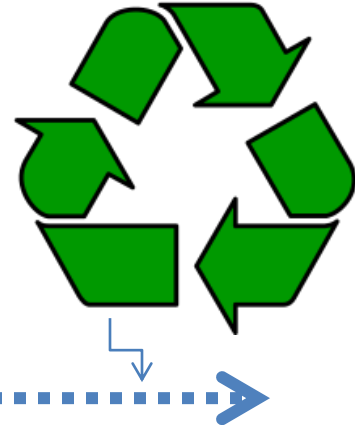


WASTE



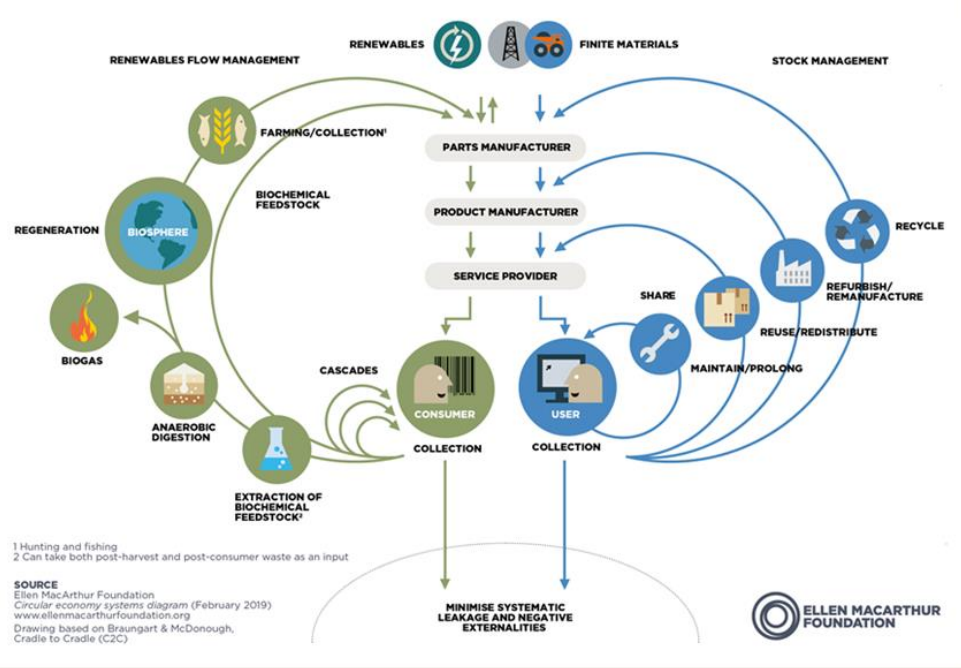
Circular Economy – A new term, but not a new idea

First Nations peoples' have a special relationship with the earth and all living things in it...Everything is taken and used with the understanding that we take only what we need, and we must use great care and be aware of how we take and how much of it so that future generations will not be put in peril. www.afn.ca/honoring-earth/



Human History

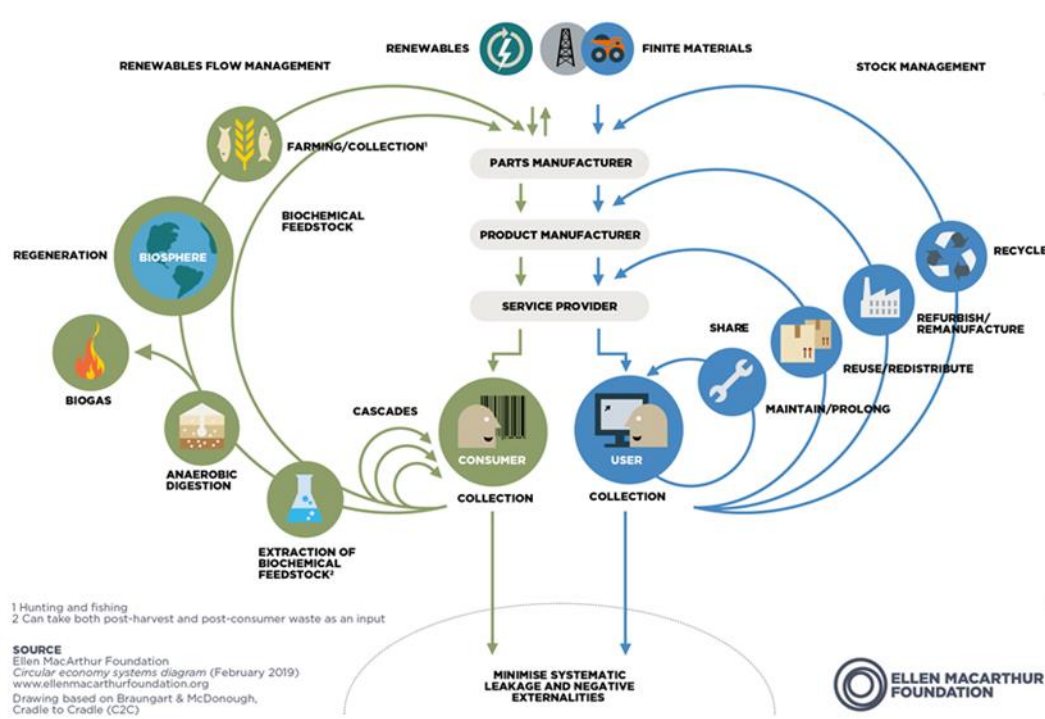
Circular Economy – Formal Definition



Circular Economy - an economic system that is based on business models which replace the 'end-of-life' (waste) concept with reducing, alternatively reusing, recycling and recovering materials in production/distribution and consumption processes with the aim to create environmental quality, economic prosperity and social equity, to the benefit of current and future generations.

(Adapted from longer definition by Kirchherr et al. 2017)

Circular Economy - systems-based thinking and 3 Core Principles



- 1. DESIGN OUT WASTE AND POLLUTION**
- 2. KEEP PRODUCTS AND MATERIALS IN USE**
- 3. REGENERATE NATURAL SYSTEMS**

Ex. 1 - Packaging in the Linear Economy

- ✓ Holds and protects contents
- ✓ Secures against tampering and/or unsafe use
- ✓ Provides space for communicating important/required information to consumers
- ✓ Is a key part of product marketing and branding
- ✓ Facilitates inventory tracking and control
- ✓ Helps discourage shoplifting



TAKE

MAKE

WASTE

Looking at Packaging “Waste” through a Circular Economy Lens

Could we redesign the packaging to utilize materials that could be composted and returned to the soil as nutrients?

Is there a way to use just one type of material to make it easier to recycle?

Can we increase the amount of recycled content in the packaging design?

How do we help encourage and facilitate recycling once consumer leaves store?



Can we reduce the amount of paper, plastic needed simply by redesigning the package?

Is there a more sustainable packaging option available?

Is there a better method to discourage shoplifting than over-sized packaging?

Are there less toxic inks, dyes and adhesives available?

Could product be sold in reusable container?

Ex. 2 - Leaf and Yard “Waste” in the Linear Economy

TAKE



MAKE



WASTE



Leaf and Yard “Waste” through a Circular Economy Lens

KEEP PRODUCTS AND MATERIALS IN USE

How do we establish and operate an efficient and effective leaf and yard waste composting program ?

Who is producing and/or selling soil in our community? Can we approach them to discuss possibilities for capturing nutrients from locally generated leaf and yard waste?

Are there community gardens or food security programs in place in our community? Can leaf and yard waste become a good source of nutrients for such programs?

DESIGN OUT WASTE AND POLLUTION

Does our public works staff collect and haul grass clippings and leaves from public spaces they service? Can we change our process/equipment to allow leaving clippings/mulch in place.

Can we encourage/incent our residents to keep their grass clippings and mulched leaves on their lawns as nutrients instead of hauling them to landfill/transfer site?

REGENERATE NATURAL SYSTEMS

Does our public works use soil or organic material? How much do they spend each year on sourcing that material. In which applications might we be able to use leaf and yard waste as a substitute?

Are there any parcels of land in the community that could benefit from the nutrients contained in leaf and yard waste?

Ex 3. Framing (Unpainted, Uncontaminated) Wood “Waste”

TAKE

MAKE

WASTE



Framing Lumber through Circular Economy Lens

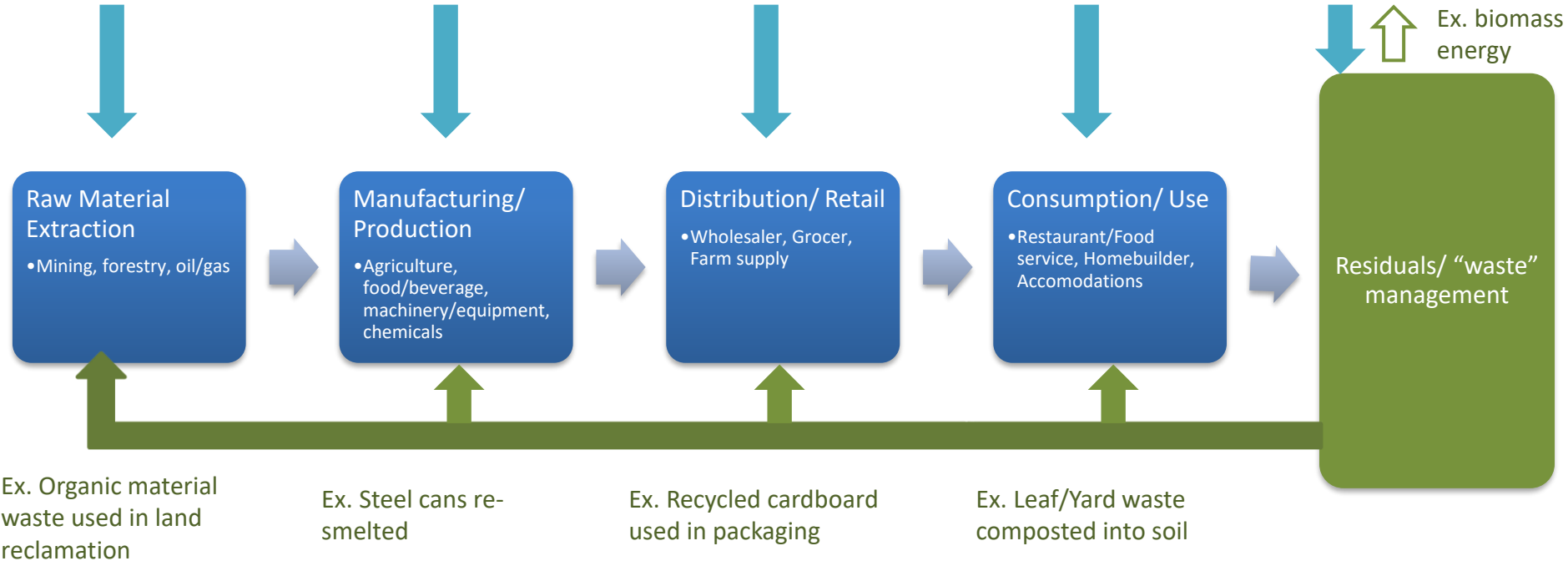


\$1,449.99

DESIGN OUT WASTE, POLLUTION	KEEP PRODUCTS, MATERIALS IN USE	REGENERATE NATURAL SYSTEMS
<p><i>Can we reduce wood “waste” through sustainable design?</i></p> <p><i>Are there sustainable alternatives, new innovations that use less wood (ex. I-Joists) and/or less toxic adhesives</i></p> <p><i>Are there new, innovative business models that incent framing contractors to minimize waste?</i></p> <p><i>What training can we provide to assist framers to minimize waste?</i></p>	<p><i>Can framing lumber scraps be used in:</i></p> <ul style="list-style-type: none">- furniture manufacturing?- manufacture of new OSB or other engineered wood products?- manufacture of kraft paper products?- Small business, social enterprise or hobbyist projects? <p>- Can (and should) more framing lumber scraps be collected for use in biomass energy systems?</p>	<p><i>Can clean wood be used in soil fabrication and/or composting?</i></p>

Circular Economy as viewed through a simplified supply chain lens

Energy Production, Distribution & Consumption



➡ Transportation, Logistics, Warehousing

7 trends pushing towards Sustainability!

1. Growing environmental imperative, urgency
2. Increased regulatory focus
3. Increasing waste management, disposal costs
4. Demanding consumers, investors, insurers
5. Evolving industry standards and practices
6. Industry and Competitors raising the bar
7. New knowledge, innovations and processes

**Strategic imperative and Strategic opportunity!*



Insurance Bureau of Canada (IBC) has signed on to UN Environment's Principles for Sustainable Insurance. IBC, Mar 14, 2018



All plastic packaging sold in the EU will be reusable or recyclable by 2030.



Key Takeaways

1. At it's core, Circular Economy is about

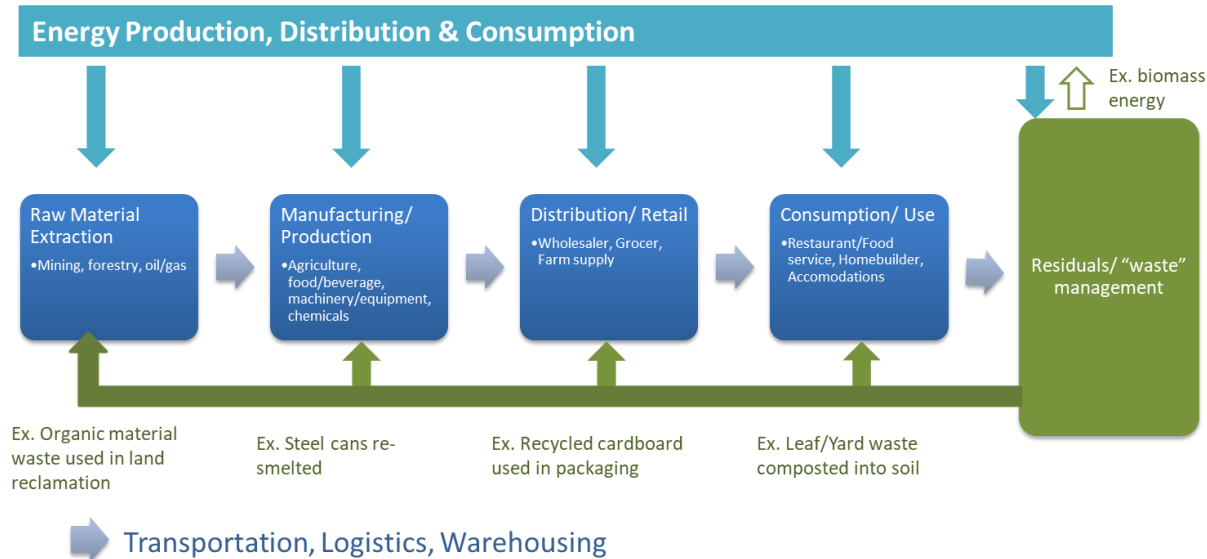


“The Earth is full. It's full of us, it's full of our stuff, full of our waste, full of our demands. This is not a philosophical statement, this is just science based in physics, chemistry and biology”.

Excerpt from “Paul Gilding: The Earth is Full”, TEDTalks, 2012.

Key Takeaways

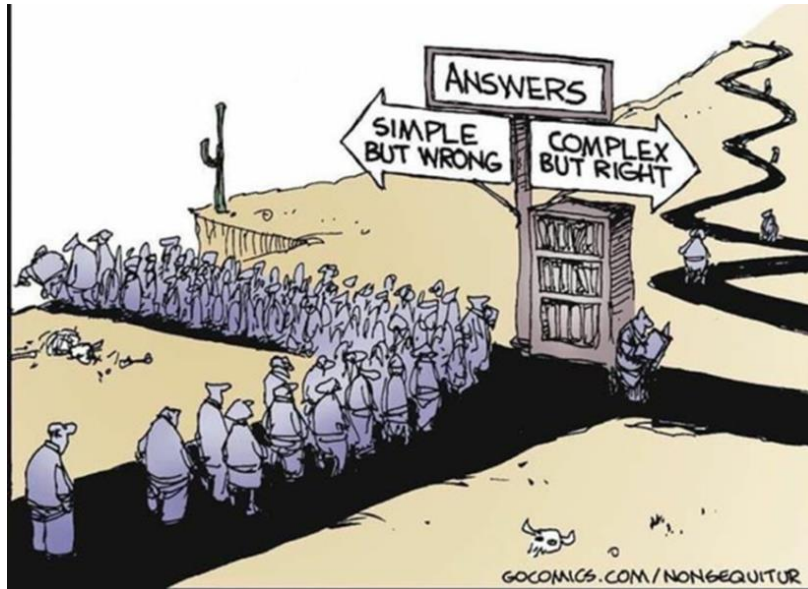
2. Circular Economy is an ideal that is contingent on all parts of the economic system working **interdependently** towards a common goal. We need government, companies, consumers, elected officials, supply chain managers, and everyone else involved in local, regional and global effort.



Key Takeaways

3. Be strategic. Be practical, Be proactive! Apply Circular Economy principles to broaden your set of options, develop solutions for diverting ~~waste~~ **resources** in your community/region.

- ✗ *Bury it*
- ✗ *Burn it*
- ✗ *Litter it*
- ✗ *Dump it in the lake*



- ✓ Design it smarter in the first place
- ✓ Repair it
- ✓ Reuse it
- ✓ Recycle it
- ✓ Recover nutrients from it
- ✓ Recover the energy embedded in it
- ✓ ...

- Participate in surveys, pilot studies, etc., help build knowledge base
- Watch for training opportunities specific to your sector and/or region
- [Supply Chain Manitoba – Circular Economy Pulse survey](#)

- <https://ellenmacarthurfoundation.org/topics/circular-economy-introduction/overview>
- <http://www.nzwc.ca/focus-areas/circular-economy/Pages/default.aspx>





Thank you for letting me be part of this important discussion!

* Some of the images on this presentation were sourced from various websites and are being used for educational purposes only. (Citations appended)



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- <http://www.commonfloor.com/guide/wp-content/uploads/2014/06/Water-Act-1974.jpg>

- <http://cdn.zmescience.com/wp-content/uploads/2013/01/china-smog11-1024x678.jpg>

- <https://www.cbc.ca/news/politics/tasker-federal-carbon-tax-explainer-1.5077445>

- https://ec.europa.eu/environment/topics/waste-and-recycling/packaging-waste_en

- Slide 2,7 - <https://archive.ellenmacarthurfoundation.org/circular-economy/what-is-the-circular-economy>

- Slide 4 – recycled byzantine glass - https://sp-ao.shortpixel.ai/client/to_webp,q_glossy,ret_img,w_597/https://timelessinnovativecreativity.co.za/wp-content/uploads/2020/03/byzantine-art-antique-glass.jpg

- Slide 4– scrap collection buggy - https://lirp.cdn-website.com/1560ba25/dms3rep/multi/opt/recycling_history-450x287-1920w.jpg

- Slide 4 – War time poster - <https://www.history.com/news/recycling-history-america>

- Slide 4– 1930s recycling depot - https://sp-ao.shortpixel.ai/client/to_webp,q_glossy,ret_img,w_220,h_208/https://timelessinnovativecreativity.co.za/wp-content/uploads/2020/03/220px-Recycle001.svg_.png

- Slide 4 – https://sp-ao.shortpixel.ai/client/to_webp,q_glossy,ret_img,w_474,h_369/https://timelessinnovativecreativity.co.za/wp-content/uploads/2020/03/wartime-recycling.jpg

- Slide 5 – trees on truck - https://e8x4d3t2.rocketcdn.me/wp-content/uploads/2016/01/Truck_load_of_ponderosa_pine_Edward_Hines_Lumber_Co_operations_in_Malheur_National_Forest_Grant_County_Oregon_July_1942-1-768x572.jpg

- Slide 5 – oil drill - https://i.cbc.ca/1.3238194.15904256361/fileImage/httpImage/image.jpg_gen/derivatives/16x9_780/canada-energy.jpg

- Slide 5 – <https://www.nortonrosefulbright.com/-/media/images/nrf/hero/infrastructure-mining-trucks.jpg?revision=c2a3f4f2-0f81-40d5-9f3e-fb62ad066955&revision=c2a3f4f2-0f81-40d5-9f3e-fb62ad066955>

- Slide 5 - transmission lines - <https://globalnews.ca/wp-content/uploads/2020/06/dpi11366213.jpg?w=2048>

- Slide 6, 7 – Photo of Kirkland brand vitamins package - <https://www.costco.ca/kirkland-signature-vitamin-b12mc-360-tablets.product.100479419.html>

- Slide 8 – sod on pallet - <http://cdn.homeguide.com/assets/images/content/homeguide-pallet-of-sod-delivered-for-residential-landscaping.jpg>

- Slide 8 – tree nursery – <https://www.erniplants.com/assets/images/vancouver-nurseries-richmond-nursery-wholesale-shrubs-trees-plants.jpg>

- Slide 8 – Filling mower with gas <https://harmonybrands.com/wp-content/uploads/2016/02/ThinkstockPhotos-87552803.jpg>

- Slide 8 – bagged Lawn soil https://da.lowes.ca/webassets/images/159200_03618007_001_l.jpg

- Slide 8 – spreading lawn fertilizer <http://plantforsuccess.com/wp-content/uploads/2019/03/fertilizing-lawn.jpg>

- Slide 8 – watering lawn and trees - <https://hips.hearstapps.com/hmg-prod.s3.amazonaws.com/images/two-sprinklers-on-lawn-1618245753.jpg>

- Slide 8 – grass clippings in garbage bag - <https://flatrate-junkremoval.com/wp-content/uploads/2021/04/yard-waste-bags-lowes.jpg>

- Slide 8 – pile of garbage bages with yard waste - <https://encrypted-tbn0.gstatic.com/images?q=tbn:ANd9GcQljAsffMjOZM9d0muQcSmSyEusBaPpU5I7DQ&usqp=CAU>

- Slide 8 - burning leaves - <https://www.gannett-cdn.com/-mm-/a6560cc2b5fba5a9364a9e31d413fa4044ae9f2a/c=0-0-3261-1842/local/-/media/2016/11/18/MIGroup/Livonia/636150708716168983-LIVBrd-11-12-2015-Milford-1-A006-2015-11-10-IMG-mto-leaf-burning-1-1-ADCGOAT5-L708173604-IMG-mto-leaf-burning-1-1-ADCGOAT5.jpg?width=660&height=373&fit=crop&format=pjpg&auto=webp>

- Slide 11 – wayfair.ca

- Slide 13 – “Simple but Wrong”, Non sequitur comics, http://www.realclear.com/comics/non_sequitur/2016/01/20/