

**POST 6: Current Topic 2021-2022**

## **Systems Thinking: Environmental Justice, Zero Waste, Pay-As-You-Throw and Product Stewardship**

1. What is Systems Thinking?
2. What is Environmental Justice (EJ)?
3. Is there more to EJ in Connecticut than what is prescribed in legislation/law?
4. What is Zero Waste?
5. How is Zero Waste different from Waste Prevention?
6. What is Pay-As-You-Throw (PAYT)?
7. How is PAYT equitable and fair?
8. What is Product Stewardship?
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### **BLOG: What is Systems Thinking?**

[What is Systems Thinking? \(snhu.edu\)](https://www.snhu.edu/what-is-systems-thinking/)

*By Marie Morganelli, Ph.D.*

Systems thinking is a holistic way to investigate factors and interactions that could contribute to a possible outcome. A mindset more than a prescribed practice, systems thinking provides an understanding of how individuals can work together in different types of teams and through that understanding, create the best possible processes to accomplish just about anything. There are systems all around us, if we know where to look.

A family unit is one system, while the community in which we live is another. That community is part of a bigger system of a county or city. All parts of a university make up different systems within the whole. Financial aid, the classroom and the library make up different systems.

By learning to view the world as a series of systems, and by understanding our part within them, we can begin to make better decisions, be better teammates and find infinite ways to be more productive in all areas of our lives.

### **What Is Systems Thinking?**

In short, “systems thinking is about investigating what set of factors and interactions are contributing to or could contribute to a possible outcome,” said Steve Brown, deputy director of collaborative learning and strategic insight at Southern New Hampshire University.

“Systems thinking is useful in helping teams become more aware of how they’re interacting with each other and within the team, and it helps them understand the outcomes they’re producing,” Brown said.

There is a wide application for thinking in this type of holistic way. Christina Dumeng, associate dean of business programs, said, “Thinking about the impact of any system as it relates to decision making is important in understanding the broader scope of how all of the pieces in your organization connect.”

### **What is an Example of Systems Thinking?**

While any team at work or at play is a system, perhaps the biggest system of all is the one with which we're most familiar: the natural environment.

"Think about the different interactions of the ecosystem and how they change," Brown said. When one aspect of the ecosystem changes, there is a domino effect on the rest of the system, sometimes in ways we could not have predicted.

Now, apply that thinking to the workplace. Consider nursing, for example. "You have professionals who need to have a comprehensive understanding of many different systems in order to do their job," said Dumeng. "They need to know about the human body, but also the community, the population and information management. Nursing professionals have to be able to connect the dots far and wide throughout these different systems to provide the best outcome for patient treatment."

### **How Do You Use Systems Thinking?**

Systems thinking is a great tool to remind us to always consider the bigger picture, according to Brown. While it's easy to see how to take things apart, it can be much more challenging to understand how the individual parts interact to make up the big picture.

Before sitting down on your own or with a team to devise a project, make a change, or solve a problem, consider the different systems your ideas could impact.

"Applying a systems thinking mindset can help provide clarity for all of the different factors that impact results," Brown said. "This type of thinking also helps you identify potential problem areas and provide you with a sense of perspective."

### **What Are Characteristics of Systems Thinking?**

Holistic thinking is a key characteristic of systems thinking. "Consider the whole over the parts," Dumeng said. "Study the patterns of behavior that you might see, and think holistically about your project to ensure you're making the best decisions that you can." Consider all possible stakeholders who might have insight or who might be affected, positively or negatively, by your proposed change.

Another key characteristic of systems thinking is the willingness to ask the right questions. Brown suggests starting by naming the problem, and then considering the factors that might be impacting the problem. Throughout the inquiry, try to be disciplined in determining the answers. A willingness to ask the right questions and consider all possible answers, as well as taking the time to experiment to find the answers rather than guess at the answers ourselves, is key.

### **Why is it Important to be a Systems Thinker?**

The world is complex, so our thinking should be complex as well. By making it a habit to consider and reconsider how our own role might be connected to others, we can mitigate impact and work together to create better solutions.

"If you just try to fix a problem by focusing on the part that needs fixing and not considering how that part got broken in the first place," said Brown, "or how the fix may impact others, you risk either getting a new problem, or you get the same problem again later."

### **Iceberg Metaphor**

For Brown, the iceberg metaphor is a classic tool. “The outcomes that we see are only what’s above the surface of the water,” he said.

When applying the iceberg metaphor to any problem, ask these questions:

- What might be below the surface?
- What the possible laws, policies, or other pieces of information that affect the problem you're trying to solve?
- What possible issues or concerns might lead to what you see above the water?

Always start with what you know, but apply the iceberg metaphor as a reminder to ask lots of questions about what might be lurking below.

### **A New Perspective**

Learning how to adopt a systems thinking mindset can be a challenge. Including many stakeholders at the start of every project can feel time-consuming and cumbersome. But, by taking the time to consider the systems with which we work up front, any project design will be that much stronger, with a solution that lasts. By learning how to continuously ask ourselves how we fit as a piece into the larger whole of the systems around us, we can work together better as teammates, colleagues, and stewards of our environments.

## **In Connecticut...**

Systems thinking is needed when identifying and implementing solutions to better manage our resources, often called waste. We need to look at the whole system of how and where resources are extracted and who is doing the extraction (labor); how materials are designed, manufactured and consumed; how to insert circularity so materials are used again in new products and relying less on disposal and when materials are disposed in landfills or waste-to-energy they don't negatively impact low-income or distressed communities.

## **Environmental Justice**

According to U.S. EPA, environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

This goal will be achieved when everyone enjoys:

- The same degree of protection from environmental and health hazards, and
- Equal access to the decision-making process to have a healthy environment in which to live, learn, and work.

In 1993 CT DEEP (then DEP) developed an [Environmental Equity Policy](#) for the agency. The Policy states that “no segment of the population should, because of its racial or economic makeup, bear a disproportionate share of the risks and consequences of environmental pollution or be denied equal access to environmental benefits.”

The Department has embraced its commitment to incorporate environmental equity into its program development and implementation, its policy making and its regulatory activities.

The Department proposes the following course of action:

- The Department will review and assess the impacts of and opportunities provided by its activities with regard to racial and ethnic minority groups and lower income residents.
- The Department will enhance communication with, and improve environmental education opportunities for, minority and lower income communities. The Department will encourage community participation in the Department’s ongoing operations and program development, including but not limited to inclusion on the agency’s advisory boards and commissions, regulatory review panels, and planning and permitting activities.
- The Department will foster a heightened awareness of environmental equity issues among its own staff and will provide training on the environmental issues affecting low-income and minority communities. Managers will implement specific environmental equity goals in their respective programs.
- The Department will work with other federal, state and municipal agencies and coordinate on environmental equity issues.
- The Department will continue to diversify the racial and ethnic makeup of its staff to better reflect and represent the Department’s diverse constituency.
- The Department will employ a staff person responsible for ensuring that environmental equity principles are incorporated into all the Department’s policies and programs.

## **Waste and Environmental Justice Communities**

In 2008, Connecticut passed its first Environmental Justice bill that opened the possibility of community engagement and informational meetings regarding the impacts of “affecting facilities”.

As written in Chapter 39, section 22a-20a of the Connecticut General Statutes (CGS) the environmental justice law requires applicants seeking a permit for a new or expanded "affecting facility" that is proposed to be located in an "environmental justice community," to file an Environmental Justice Public Participation Plan with and receive approval from the Department prior to filing any application for such permit.

Section [22a-20a CGS](#)

(1) **“Environmental justice community” means** (A) a United States census block group, as determined in accordance with the most recent United States census, for which thirty per cent or more of the population consists of low income persons who are not institutionalized and have an income below two hundred per cent of the federal poverty level; or (B) a distressed municipality, as defined in subsection (b) of section 32-9p;

(2) **“Affecting facility” means** any (A) electric generating facility with a capacity of more than ten megawatts; (B) sludge or solid waste incinerator or combustor; (C) sewage treatment plant with a capacity of more than fifty million gallons per day; (D) intermediate processing center, volume reduction facility or multitown recycling facility with a combined monthly volume in excess of twenty-five tons; (E) new or expanded landfill, including, but not limited to, a landfill that contains ash, construction and demolition debris or solid waste; (F) medical waste incinerator; or (G) major source of air pollution, as defined by the federal Clean Air Act. “Affecting facility” shall not include (i) the portion of an electric generating facility that uses nonemitting and nonpolluting renewable resources such as wind, solar and hydro power or that uses fuel cells, (ii) any facility for which a certificate of environmental compatibility and public need was obtained from the Connecticut Siting Council on or before January 1, 2000, or (iii) a facility of a constituent unit of the state system of higher education that has been the subject of an environmental impact evaluation in accordance with the provisions of sections 22a-1b to 22a-1h, inclusive, and such evaluation has been determined to be satisfactory in accordance with section 22a-1e;

According to the CT League of Conservation voters the 2008 law was a good first step to “establish community-based accountability” but it did not specify any repercussions for the facilities or entities that didn’t comply. In 2020, the legislature [overwhelmingly passed](#) House Bill 7008 to revise the state’s environmental justice regulations and require facilities that impact the environment to improve communication with the public and provide services or funding that would mitigate any environmental effects on the surrounding community.

**What would an improved Environmental Justice Law do?**

An improved Environmental Justice Law would give communities a voice in defending their right to a healthy life and deciding where polluting facilities are to be located. In 2020, the legislature raised **HB 7008**, (now **Public Act 20-6**), **An Act Concerning Enhancements to The States Environmental Justice Law**.

**Benefits of Public Act 20-6:**

- Reduce health burdens on communities of color and low-income communities;
- Ensure that residents of environmental justice communities have a voice in deciding upon a proposed affecting facility in their area;
- Mandate notification to municipal residents, city commissions, and Neighborhood Revitalization Zones of potential commercial and industrial interests in their area;
- Ensure accessible outreach in community members' preferred language;
- Protect clean air and water for people and wildlife.

Source: [CT League of Conservation Voters](#)

In 2021, the conversation continued about how to strengthen and/or improve Connecticut’s environmental justice law. Many bills were raised in 2021, but none passed.

[Opinion \(Mathieu Aguilar\): HB 6551: Connecticut's take on environmental justice: A step in the right direction \(ctmirror.org\)](#) Mathieu Aguilar is majoring in Philosophy and Public Policy and Law at Trinity College.

## Zero Waste

Zero Waste is a philosophy and a design principle for the 21st Century. It includes 'recycling' but goes beyond recycling by taking a 'whole system' approach to the vast flow of resources and waste through human society.

Instead of viewing used materials as garbage in need of disposal, materials are recognized as valuable resources. A pile of 'trash' represents community and economic opportunity including jobs and new products from raw materials.

The zero waste approach seeks to maximize recycling, minimize waste, reduce consumption and ensures that products are made to be reused, repaired or recycled back into nature or the marketplace.

Zero Waste:

- Redesigns the current, one-way industrial system into a circular system modeled on Nature's successful strategies— creating products and packaging that are durable, can be reused or easily recycled
- Provides waste-based business opportunities to create jobs from discards
- Recognizes the importance of producer responsibility
- Aims to eliminate rather than manage waste
- Works to end tax payer subsidies for use of virgin materials enabling reused and recycled products to compete.

## Adopting Zero Waste Strategies for your Municipality

Becoming a 'zero waste' community is not about never generating any waste at all, but rather a policy goal to work towards preventing and reducing waste and conserving resources.

**Case Study:** Zero Waste in King County, Washington [Zero Waste - Garbage & recycling services - King County Solid Waste Division - King County](#)

- Zero Waste of Resources is an idea that is catching on throughout the country. King County adopted a policy to work toward Zero Waste by 2030, meaning that materials of value, whether for reuse, resale, or recycling, won't be put in the garbage and end up in their local landfills.
- Zero Waste of Resources does not mean zero garbage! There will always be some garbage that needs to be managed, but with an effort to develop the Zero Waste of Resources 2030 policy, these items will be recycled or reused.
  - [Why is Zero Waste important?](#)
  - [What is a Wasted Resource?](#)

- [Examples of Zero Waste Activities](#)

**Case Study:** Nashville, Tennessee [Striving for Zero Waste | Nashville.gov](#)

In December 2019, Nashville's Solid Waste Region Board approved a [Zero Waste Master Plan](#) to lead the region in achieving zero waste. The plan was then adopted by Metro Council and includes the following goals:

1. Reach zero waste - defined as diverting 90% of Nashville's waste away from landfills
2. Increase recycling, food waste reduction and recovery, and composting throughout Davidson County
3. Adopt recycling and recovery programs targeted towards Nashville's growing [construction and demolition waste](#) stream
4. Strengthen public education programs to help Nashvillians refuse, reduce, reuse, recycle, and compost

**Case Study:** New York City [DSNY - Zero Waste \(nyc.gov\)](#)

#### Take the Zero Waste Pledge

New York City asks its resident's to be part of the solution by taking a pledge to reduce, reuse and recycle! By taking the pledge, they're letting residents know they are "committing to living a greener lifestyle whether that means donating the clothes you never wear, separating out your food scraps for compost or recycling your old laptop. Instead of sending trash to a far-away landfill, take the pledge to create a more sustainable city for future generations to come."

See New York City's Zero Waste Pledge [here](#).

## Reduce Your Trash: Pay for What You Generate

Pay-As-You-Throw (PAYT) also known as Unit Based Pricing (UBP) or SMART (Save Money and Reduce Trash) is a method of charging for the disposal of trash based on the amount disposed. This approach to managing trash is recognized globally as the single most effective action a municipality can take to provide an incentive to residents to reduce waste, increase recycling and composting, and reduce climate impact.

In a PAYT program, a household is charged for waste collection *based on the amount of waste they throw away* - in the same way that they are charged for electricity, gas, and other utilities. This provides incentives for residents to not only increase the amount they recycle and donate but also to think about ways to generate less waste in the first place.

Currently many municipalities pay for waste management services through a fixed fee or property taxes. When residents pay directly for waste disposal services, they are

provided with a financial incentive to reduce their waste through reuse or donations, waste reduction, recycling, and composting.

Pay-As-You-Throw Programs for Trash are:

- Fiscally Responsible - [Stonington, CT](#) has saved \$7M on trash since 1992
- Environmentally Responsible - [Mansfield, CT](#) residents generate 500 pounds of trash per capita annually compared to average CT resident of 740 pounds
- Socially Responsible - reuse and recycling materials uses less energy and in turn generates less greenhouse gas emissions than burning or landfilling trash that disproportionately affect environmentally distressed communities
- Equitable - residents who reduce and recycle are rewarded with a lower trash bill



**Other outcomes:**

- [Institute for Local Self-Reliance](#) analyzed data revealing that Pay As You Throw (PAYT) is “the single most effective way to educate and motivate residents to reduce, reuse, recycle and compost” and is recognized as the vital first step to reaching zero waste.
- Residents are more likely to participate in curbside or drop-off food collection programs if they already actively manage their trash ([Institute for Local Self-Reliance study, 2018](#)).
- Statewide implementation of PAYT would result in reducing greenhouse gases by the equivalent of installing one solar panel on every house.

**Product Stewardship**

Extended Producer Responsibility (EPR), also known as Product Stewardship, is a strategy to place a shared responsibility for end-of-life product management on producers, and other entities involved in the product chain, instead of the general public; while encouraging product design changes that minimize negative impacts on human

health and the environment at every stage of the product's lifecycle. This allows the costs of processing and disposal to be incorporated into the total cost of a product. It places primary responsibility on the producer, or brand owner, who makes design and marketing decisions. It also creates a setting for markets to emerge that truly reflect the environmental impacts of a product, and to which producers and consumers respond.

The terms product stewardship and extended producer responsibility (EPR) are sometimes used interchangeably, but many states including Connecticut view them differently.

**Product stewardship** is the act of minimizing the health, safety, environmental, and social impacts of a product and its packaging throughout all lifecycle stages, while also maximizing economic benefits. The manufacturer, or producer, of the product has the greatest ability to minimize adverse impacts, but other stakeholders, such as suppliers, retailers, and consumers, also play a role. Product Stewardship can refer to as either voluntary program or be required by law.

**Extended producer responsibility** (EPR) is a mandatory type of product stewardship initiated due to passing a law. EPR includes, at a minimum, the requirement that the manufacturer's responsibility for its product extends to post-consumer management of that product and its packaging. There are two related features of EPR policy: (1) shifting financial and management responsibility, with government oversight, upstream to the manufacturer and away from the public sector; and (2) providing incentives to manufacturers to incorporate environmental considerations into the design of their products and packaging.

#### EPR Programs in Connecticut

- CT Paint Stewardship Program <https://www.paintcare.org/states/connecticut/>
- CT Mattress Stewardship Program <https://mattressrecyclingcouncil.org/programs/connecticut/>
- CT Electronic Stewardship Program <https://portal.ct.gov/DEEP/Reduce-Reuse-Recycle/Electronics/E-Waste-Home>
- CT Mercury Thermostat Stewardship Program [Mercury Thermostat Management \(ct.gov\)](#)

#### Voluntary Product Stewardship Programs in Connecticut

- Battery Recycling [Call2Recycle](#) - drop off your old batteries for free at participating retailers
- [Plastic Film Recycling](#) aka WRAP program – drop off plastic film for free at participating by retailers

#### Other types of EPR Programs Elsewhere

- Solar Panels, State of Washington [Solar panels - Washington State Department of Ecology](#)
- Pesticide Containers, California [Extended Producer Responsibility Laws in California](#)

- Mercury Containing Bulbs and Batteries, Vermont [Product Stewardship | Department of Environmental Conservation \(vermont.gov\)](#)

### CT Essential

- [Identifying Communities with Environmental Justice \(EJ\) Concerns](#) - EPA video (10:12)
- [Grassroots Recycling Network](#) – check out their webpage, services and info
- [Institute for Local Self-Reliance study, 2018](#)
- [Product Stewardship Institute](#) – check out their webpage, services and info

### CT Good Resources

- [Learn About Environmental Justice | US EPA](#)
- [The Systems Thinker – It Will Take Time to Perfect Recycling - The Systems Thinker](#)
- [Waste Incineration is an Environmental Justice Issue - Conservation Law Foundation \(clf.org\)](#)
- [The Zero Waste Solution: How 21st Century Recycling and Trash Reduction Can Protect Public Health and Boost Connecticut's Economy](#) About how the state of CT needs to start looking at zero waste. (ConnPIRG Education Fund, Spring 2013)
- [National League of Cities](#) identifies PAYT (aka SMART) as top strategy to reduce municipal solid waste.

### CT Resources if you want to know more/dig deeper

- [Demographics and Affecting Facilities Web Map](#)
- [The Systems Thinker – Systems Thinking: What, Why, When, Where, and How? - The Systems Thinker](#)
- Mapping Tool for CT Environmental Justice Communities - Refer to the [NEW UPDATED MAP](#) includes distressed municipalities.
- [Connecticut's Environmental Justice Law](#) (2017) This report summarizes Connecticut's environmental justice statute ([CGS § 22a-20a](#))
- [Connecticut Passed An Environmental Justice Law 12 Years Ago, but Not That Much Has Changed: Reform legislation that could be considered this summer would mandate hearings and mitigation agreements.](#) Inside Climate News, July 21, 2020.
- [Connecticut Takes Action on Climate - Conservation Law Foundation \(clf.org\)](#)
- [Connecticut Coalition for Environmental Justice | Facebook](#)
- [New Haven Environmental Justice Network | Facebook](#)