ALLIANCE TO END PLASTIC WASTE

School District's Zero Waste Playbook

A Guide to Achieving Sustainability and Reducing Waste

Created by the Alliance to End Plastic Waste and Bain & Company

Focus of “zero waste” programs & the playbook

Reduce organics disposed in trash through **composting**

New revenue stream by capturing cardboard produced in larger schools

Increase overall rate of recycling

Achieve ~70% diversion rate through:

‘Zero Waste’ playbook encompasses guidelines across several areas

Topic	Sub-Topics
Recycling setup/infrastructure	Areas of waste generation Bin needs and set-up best practices
Role and Responsibilities	School level School district level
Recycling specific training	Training highlights and modules
Tracking and communication	Communication principles KPI and metrics
Implementation timeline	Program roadmap and ramp-up options
Resources for reference	Activities and examples from best-in-class schools/school districts

“Zero Waste” playbook is created to serve as a guidebook to establish base-line for the recycling program

What this playbook IS

- ✓ Provide information on school “Zero Waste” best documented practices
- ✓ Guidelines to help establish a recycling program at school districts
- ✓ Starting place for solutions and resources

What this playbook IS NOT

- X One-size-fit-all solution to “Zero Waste”
- X Tailored for each school
- X All-inclusive list of ideas and solutions

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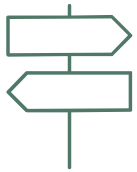
Recycling Setup Infrastructure & Best Practices

- Areas of waste generation
- Bin needs and setup best practices

There are three key tenets of recycling set-up in a school

RECYCLING SETUP

A 

Bin signage and color coding

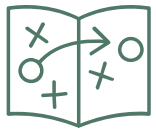
Clear description / graphics of what type of waste belongs in each bin to make diversion as easy as possible

Common tenets across all areas withing school

B 

Bin type, size and count

Specific collection infrastructure needs for that area

C 

Setup of area

Situational assembly of waste collection station to meet waste stream needs in that area

Unique tenets for following areas within school

- **Cafeterias / kitchen / storage areas:** *Primarily generates organic waste and cardboard; High schools will also create plastic waste from vending machines*
- **Classrooms / offices / "other" rooms:** *Primarily generates discarded paper*
- **Communal spaces:** *Diverse waste composition given variety of communal spaces found in schools; spaces include entrances, libraries, sports fields, auditoriums, etc.*

Bin signage and color coding should be clear and consistent across areas

RECYCLING SETUP

/ILLUSTRATIVE

Recommended best practices

- Bin color coding should ideally align with the curb-side collection coding mandated by the city
- Mandatory signage **directly above or on bin**
  - Ensure signage is **not blocked or damaged**
- Signages to **list out all acceptable items** in each bin
  - **Mandatory visuals** on signs and multi-lingual signs based on demographics
  - Additional information sheet on not acceptable but **commonly mistaken items** for each bin

Example color coding

Based on current majority in schools

Function	Color	Logo	Signage with pictures
Recyclables	Blue	Recycle	• Flattened cardboard, paper, mail • Aluminum, tin, steel, and empty aerosol cans
Trash	Grey	Trash can	• All other wastes
All Plastics	Green	Recycle	• Plastics #1-7
Compost	Brown	Compost bin	• Food items without wraps or containers

Example signage

(Based on existing city of Houston guideline)

B Bin type and count are driven by needs and use of the area generated

RECYCLING SETUP

Common principles

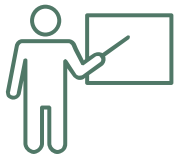
All areas

- At least **1 trash & recycling bin per room**
- **Recycling bin larger** than trash bins
- Collection areas in **same location every day**
- **Do not use heavy or difficult-to-open lids** to eliminate dumping outside of the bins

Area specific considerations

Cafeterias / kitchen / storage areas

- 5-10 recycling bins*
- 1-4 compost bins
- 50-gallon bins
- At least 3 recycling areas – one at each end of kitchen and entrance
- Large bins should have wheels to make movement easier with heavy waste



Classrooms / offices / “other” rooms

- 1+ recycling bin per classroom and office space
- 7-gallon bins
- At least 1 recycling bin per classroom / office / “other” room

Communal / common spaces

- 5-15 recycling bins
- 1-2 compost bins
- 23-gallon bins
- 1-2 compost bin(s) should be placed in communal areas where students commonly eat

Note: *cafeteria recycling bins will need to be emptied multiple times per day at all schools; *high school recycling bins will be split between single stream and cardboard bins; ranges based on averages across school types (elementary, middle, and high school); actual range in bin needs between smallest and largest schools is larger

Each area should have a few common setup principles…

RECYCLING SETUP | ALL AREAS

Bins **placed together** at sorting station

Illustrative

Signage above at eye level or on bins indicating which waste types belong in each bin

No plastic bags for recycling bins (Specific to Texas as films are considered as contaminants single-stream recycling)

Bins **color coded based on waste type** (single stream recyclables, trash, compost)

© …but different waste generation areas will differ slightly

RECYCLING SETUP | SPECIFIC AREAS

Cafeterias / kitchen / storage areas

- **4 stack setup:**
  - Single stream recycle / compost / trash / all plastics
- **Cardboard broken down and placed in separate area** for baling

Note: Excludes trash bin considerations

Classrooms / offices / "other" rooms

- **2 stack setup:**
  - Single stream recycle / trash
- Bins placed near door

Communal / common spaces

- **4 stack setup:**
  - Single stream recycle / trash / compost / all plastics
- Collection stations spread throughout high traffic areas (hallways, entrances, sports fields, etc.)

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Roles & Responsibilities

- Individual schools level
- School district level

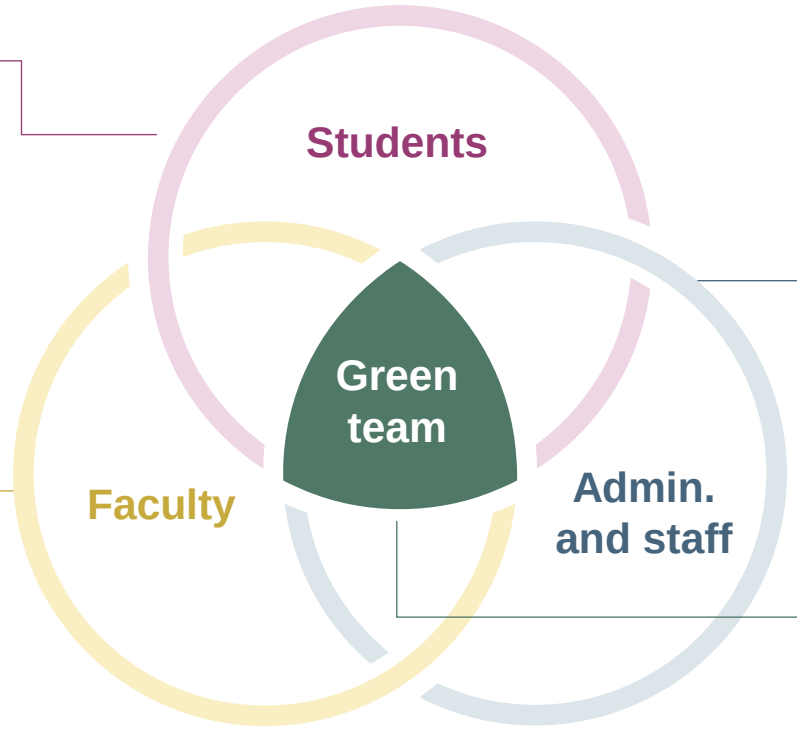
A successful recycling program requires an engaged community within the school

ROLES

- **Participate heavily in all parts of the program:**
  - Encourage participation among peers
  - Become members of the ‘green team’
  - Volunteer with the setup of new recycling and composting areas
  - Propose new initiatives to reduce waste

- **Incorporate sustainability and recycling** into their curriculum

- **Advocate** for the recycling program and **drive compliance** among students



- **Manage the logistics of the new waste program:**
  - Distribute and place containers
  - Flag contaminated or overfilled bins
  - Transport and dispose of waste to external dumpsters
  - Ensure disposal areas are properly maintained

- Diverse team of **local school representatives** from core functions alongside **motivated volunteers**

- Spearheads the **program rollout** and provides **long-term support**

Pilot will require each stakeholder to execute on their roles well to foster a collaborative environment and seamless coordination

ROLES

Stakeholders	General roles and responsibilities
 **Green team**	• **Customizes program rollout** for the individual school • **Trains / coordinates staff** to ensure roles are being executed against actions plan • **Builds awareness** through progress announcement / reporting throughout the year • **Supports staff** needs / efforts to improve morale and participation
 **Administration and staff**	• **Maintain recycling areas** in kitchen / cafeteria / storage / communal areas • **Properly bale and store cardboard** for collection • **Manage curbside disposal** for on-time hauler collection • **Raise program deficiencies** for adjustment
 **Faculty**	• **Incorporate sustainability into education curriculums** to make students familiar with recycling procedures • **Maintain recycling areas** in classrooms • **Inspire and guide students** to create a culture of sustainability
 **Students**	• **Actively participate in recycling program** set by Green team, faculty, and staff • **Hold classmates / peers accountable** for not following guidelines

To prepare each stakeholder for their respective roles and responsibilities, unique training is required

Typically, the green team consists of 4 key leadership positions along with other support members

ROLES

Key roles	Accountabilities
School Champion	• **Leader of the green team,** accountable for the school's waste program • Main contact for school district that **reports progress and escalates roadblocks** • **Ensures the district-wide recycling playbook is customized for their individual school**
Custodian	• **Representative** for the cafeteria and janitorial staff • **Trains custodial staff** in new disposal procedures • **Enforces proper maintenance** of waste disposal areas
Faculty champion	• **Voice of the faculty** for raising concerns or sharing ideas • **Recycling training lead –** shares curriculum requirements with the other faculty members and holds regularly occurring information sessions for students, staff, and administrators
Student body champion	• **Liaison** between students and the faculty, administration, and staff • **Plans and supports recycling events** for the school • **Shares new changes, results, and success stories** with the rest of the student body
Other members	• **Additional volunteers,** often interested students, facility, staff, administrators, and parents • **Assist leadership positions across a range of activities,** including encouraging participation, creating a list of initiatives, organizing events, educating participants, conducting waste audits, etc.

Example guide to set up green team

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Recycling Training

- Training highlights and modules

Training modules and topics for each stakeholder group should be tailored based on their roles and responsibilities

RECYCLING TRAINING

Green team

- ❑ What / how to recycle
- ❑ High level recycling planning for faculty / staff
- ❑ Tracking KPI's and reporting
- ❑ Waste auditing
- ❑ Roles / responsibilities of each stakeholder
- ❑ Regular communication / meetings with other stakeholders (e.g., planning meetings, school assembly's)

Administration & staff

- ❑ What / how to recycle
- ❑ Waste auditing
- ❑ Kitchen setup / signage
- ❑ Cafeteria setup / signage
- ❑ Recycling area monitoring / maintenance (e.g., cleanliness and disposal)
- ❑ Baler operation / maintenance

Faculty

- ❑ What / how to recycle
- ❑ Classroom setup / signage
- ❑ Recycling area monitoring / maintenance (e.g., cleanliness and disposal)
- ❑ Incorporate sustainability in curriculum (e.g., classroom activities, fieldtrips)
- ❑ Student involvement and consistency (e.g., rotating recycling monitors, green team)

Students

- ❑ What / how to recycle
- ❑ Green team volunteer: roles and responsibilities

Common to all stakeholders

Example of educational resources (NYC)
Example of educational resources (San Diego)

Curriculum for all stakeholders includes a thorough overview of waste & sustainable practices

RECYCLING TRAINING

Waste generation

- Share how trash **disposal in landfill works**
- Identify **key waste generation points** within a school
- **Promote awareness of different environmental issues**, such as improper waste disposal, around the world and how recycling impacts the environment

Waste Composition

- **Identify recyclable and non-recyclable materials** to encourage proper participation
- Highlight **common contaminants**
- Share **how waste decomposes** and the benefits of food composting

Reduce, reuse, recycle

- **Reduce:** Highlight the why and how of reducing one's waste footprint
- **Reuse:** Share the concept of material reuse and resource conservation
- **Recycling:** Identify what recycling opportunities are available in the school and wider community

State Ordinances

- **Provide overview of essential rules in existing recycling ordinances** in the state and district (e.g., recyclable materials, signage and container color codes)
- Ensure stakeholders can **practice recycling** based on the ordinance's requirement

Source: Trash Free Schools Guidebook; Recycling Education Teacher's Book

Training can take place across a variety of formats

RECYCLING TRAINING

In-person

Classroom and activity-based learning

Video

Virtual conferences and recorded video to supplement in-person lessons

Email

Quickly distribute new information to all stakeholders

Posters

Provide quick facts and reminders in high traffic areas

Signage

Easily accessible information to prevent improper disposal

Maximize outreach by utilizing each distribution method

Student education should be a combination of classroom + in the field activity-based learning

RECYCLING TRAINING

Activities should take place in school…

- Conduct a **classroom trash audit**
- Begin **Vermicomposting food scraps** as part of a science lab
- Hold a **poster design contest**
- **Invite a speake**r from the waste industry to present at a school assembly
- **Hold a contest** to see which classroom can generate the least amount of waste
- Put on **an event such as 'recycling trivia'** quiz bowl during lunch
- **Create a "science fair"** for students to share their research on sustainability topics

…and offsite to provide tangible experiences

- Take **field trip to a local recycling, composting, or landfill facility**
- Partner with local waste facilities to provide high school **students with internships**
- Hold a **"sustainability volunteer day"** where students can clean up local parks and community areas
- Take a **field trip to a store**, such as Wal-Mart, to highlight all the different types of products that can be recycled
- **Allow high school students to volunteer** with elementary and middle school recycling programs

District program led by School District Central Sustainability Team with support from School Champions

For large districts, guidance typically flows from district-level to school-level sustainability positions

School District Central Sustainability Team

- **Oversees the district wide recycling program** and establishes the future school district vision
- **Ensures standardization** where required and **use of best practices** across all schools in the district
- **Offers support to school teams** as needed

School Champion

- **Point of authority at the school-level,** accountable for the implementation of the waste program
- **Reports progress and escalates roadblocks**

Green Team

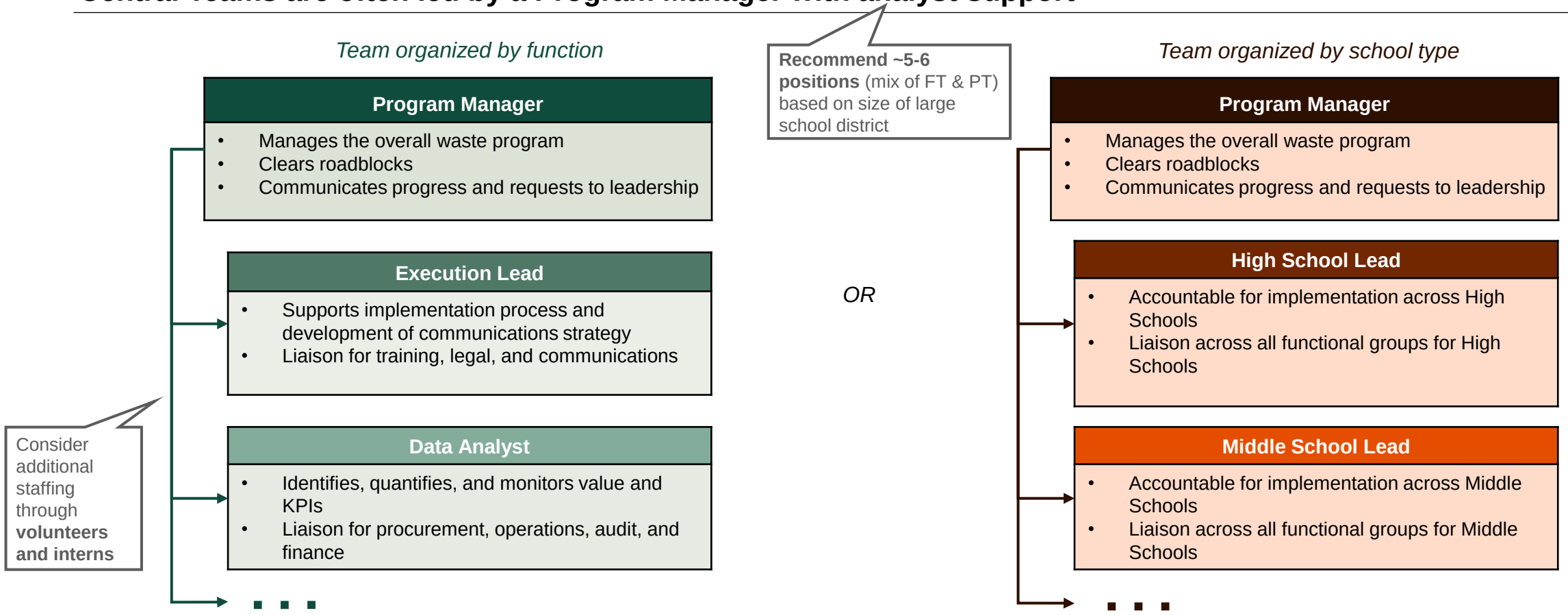
- **Working team** that spearheads **the program rollout** at their school and provides **long-term support**
- **Supports the School Champion** in tailoring the district-wide playbook, building awareness, proposing new initiatives, planning events, providing training, conducting audits, etc.

Made up of existing school resources – faculty, staff, and students

Source: Keepaustinbeautiful.org; Recycling Manual for New Jersey Schools

School District Central Team will need to be supported with the appropriate resources to achieve program goals

Central Teams are often led by a Program Manager with analyst support



Although structure of the Central Team varies in other districts, common to align resources according to function

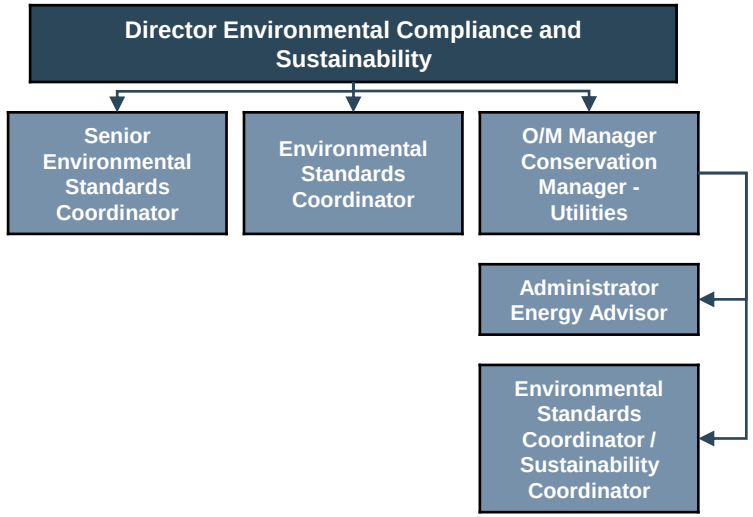
San Francisco Unified SD

- **51,790 students**
- Schools **diverted between 34.6% and 91.4%** of waste, as of August ‘21
- **85% diversion goal** for all schools by 2025

Sustainability team is a standalone department with ~5 positions

Orange Country PS (Orlando, FL)

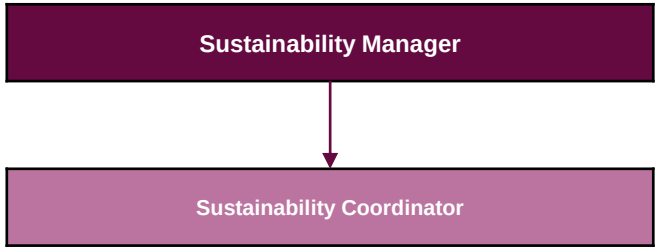
- **206,058 students**
- District **diverted between 50% and 61%** of waste annually from ’16-’20
- Set a district-wide **diversion goal of 75%**



Sustainability is integrated with environmental for a total of ~6 positions

School District of Philadelphia

- **113,443 students**
- District **diverted 12% of waste**, as of Feb. ‘20
- Goal to **increase district-wide diversion by 10%** over 5 years



Sustainability team is a standalone department with ~2 positions

Well-staffed teams are critical to achieving diversion goals

Source: San Francisco Unified School District; School District of Philadelphia; Orange County Public Schools; USNews.com

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Tracking and Communication

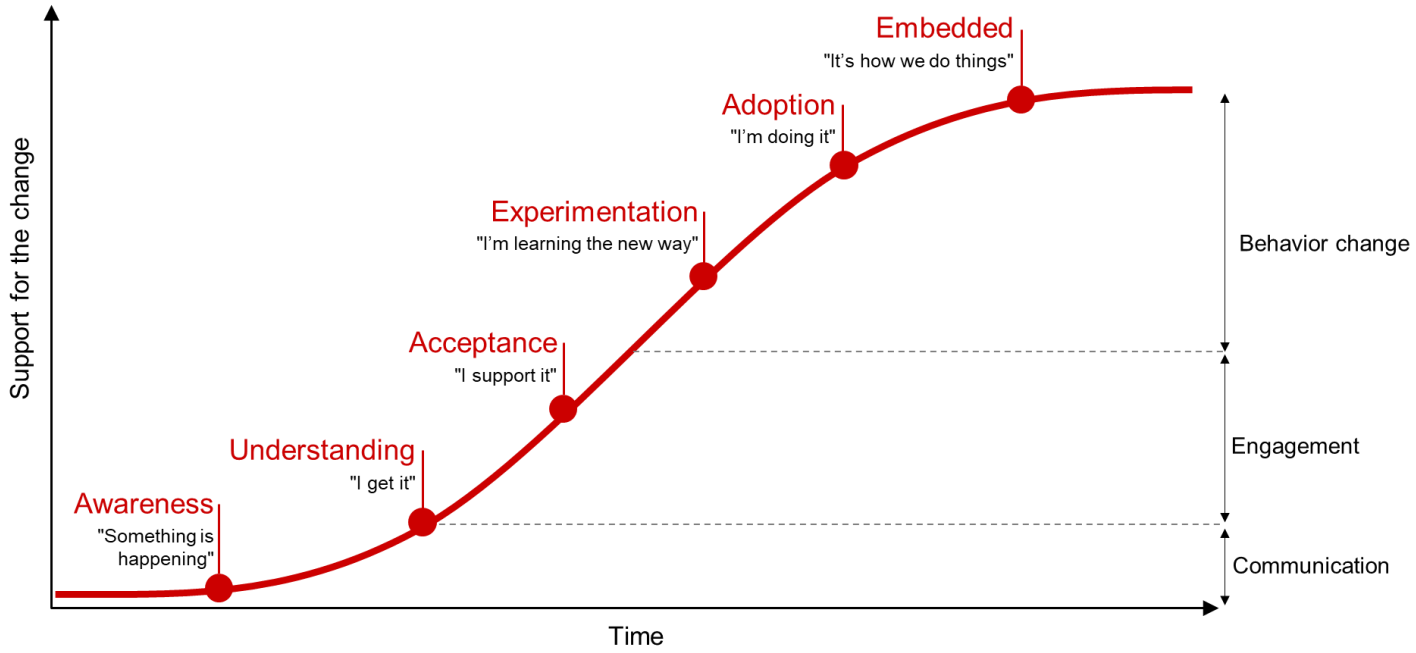
- Communication principles
- KPI’s & Metrics

Recycling programs require major behavior changes that must be managed through communication & engagement

A change of this magnitude will be difficult

- Significant changes are often followed by a **period of disruption**
  - People may experience loss of control, resistance, and difficulty processing the reason for the change
- Change is not homogeneous; **different stakeholders will have different concerns over time**
- **Focus on building commitment to the new behaviors** by ensuring people feel:
  - Informed, heard, connected
  - They can trust, be trusted, understand the benefit, and have some sense of control

Proper engagement will drive the transition to the ‘new normal’

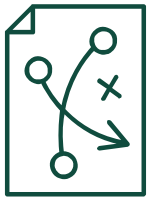


There are 2 key principles to aid in the development of the engagement plan

Understand the people involved in the change

– *Who receives the message?*
– *Who delivers the message?*

- Develop **targeted understanding of who is most impacted** by the change and how to address their specific concerns
- **Identify the "influence network"** that will enroll the population and cascade messaging throughout the target populations

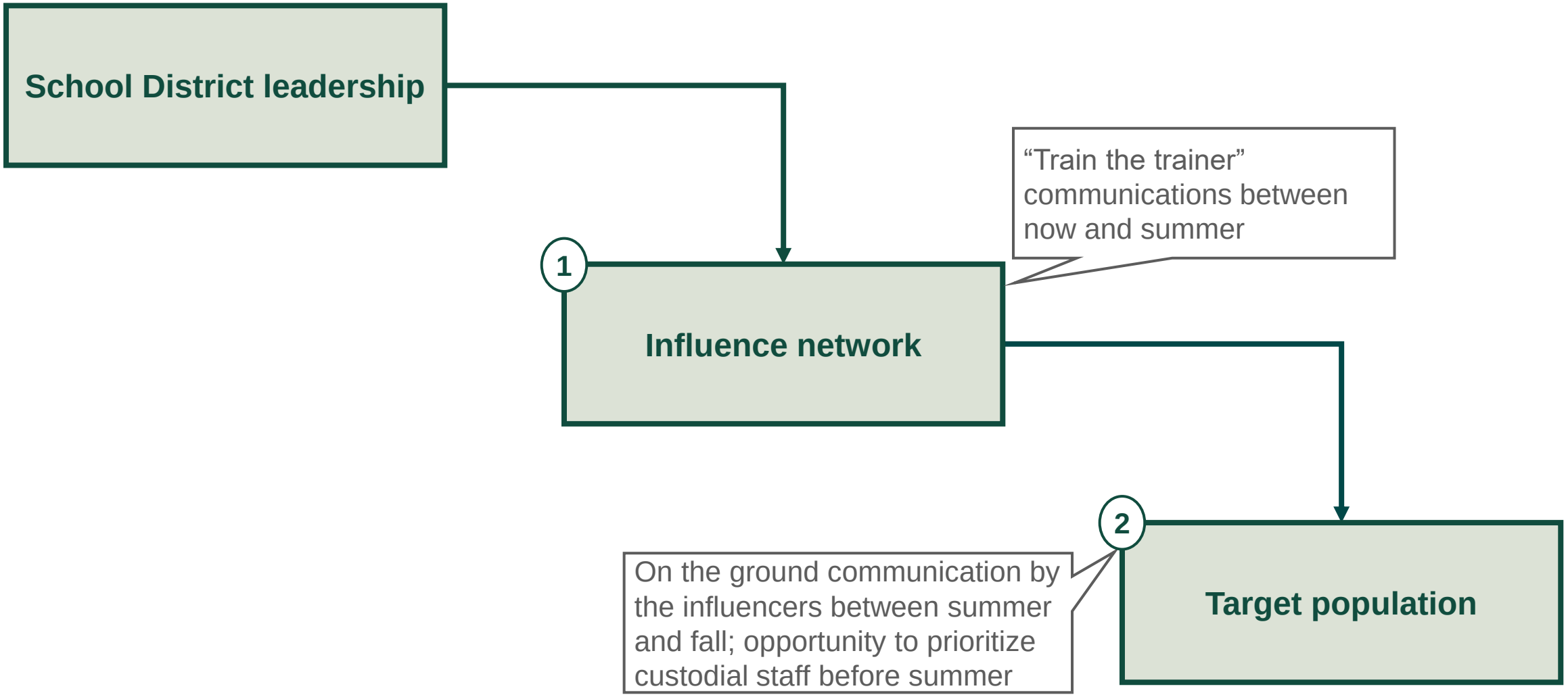


Design an outreach plan

– *What is the message?*
– *When is it communicated?*
– *How is it communicated*?

- **Emphasize the key components** of the program's future vision, goals for success, and curriculum to promote the desired behaviors
- **Create a content calendar to spread curriculum over an extended period,** increasing exposure to messaging & creating sustained buy-in
- Utilize the **most effective communication channels,** establishing a **two-way dialogue** to receive relevant feedback and better tailor outreach

Who: Communications typically cascade through influence network; it is critical to start engaging early on



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Who: The influencing networks are made up of people acting as enforcing agents to catalyze the change

There are 7 key influencers at the district & schools

School District Leadership

District Coordinator

Principals

Champions

Plant Operator

The Green team and faculty serve as the liaisons between the influencers and impacted population

Green Teams

Faculty

Influencers move people up the commitment curve

- Help teams understand the **case for change & point of arrival**
- Ensure changes are **embedded and sustained**
- Dedicate time and secure resources **required to mitigate risks**
- Provide adequate **support throughout change**

Who: Understand the target populations to drive behavior change in the most critical groups

Identify those most impacted by the change…

Target populations

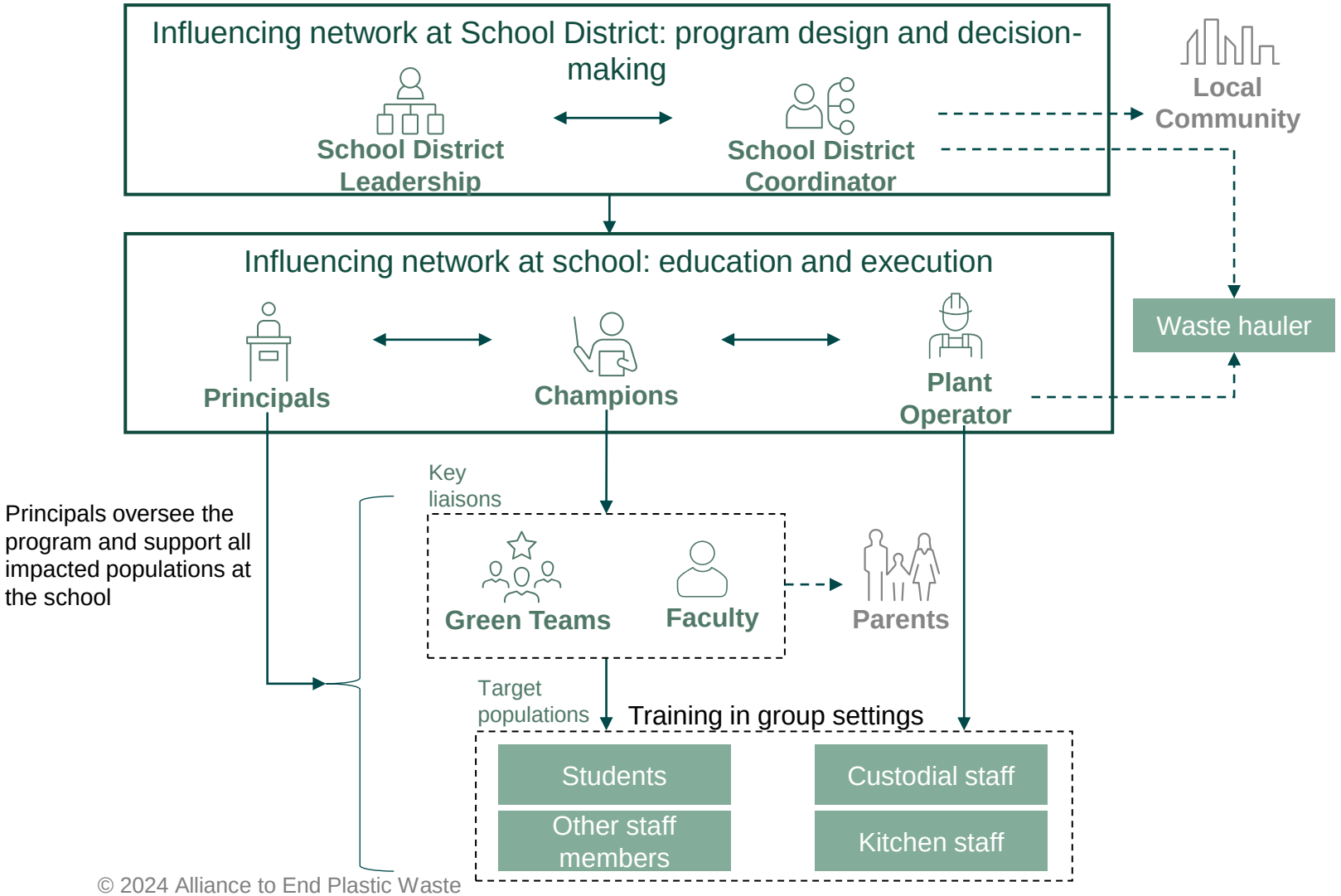
People who will be most impacted by change and who most need to change their behavior

- Students
- Custodial staff
- Kitchen staff
- Other staff members
- Waste haulers

…so that their specific concerns can be addressed

- **Students**
  - What can be recycled & how can it be recycled?
- **Custodial staff**
  - How do the daily back-end logistics change?
- **Kitchen staff**
  - How will the program impact kitchen processes?
    - > E.g., cardboard baling, composting
- **Other staff members**
  - What can be recycled & how can it be recycled?
- **Waste haulers**
  - What waste needs to be picked up & how often?

How: A structured and defined flow of information ensures that all population groups are reached



- School District Coordinator **receives approval** and high-level guideline from School District leaders and **conveys program details to influencers at schools**
- Principals, champions, and plant operators **collaborate** with each other and make **training plans for students, faculty, and staff**
- Green team and faculty **lead marketing and education effort** for the **general student body**; plant operator **trains custodial staff and kitchen staff** on the new recycling system

When: School District should focus on onboarding & training in the near term before transitioning to formal check-ins & KPI

Priorities between January and summer

Timeline priority

- **Onboarding influencers**: share case for change and program goals with influence network
  - **Share vision and missions**
  - **Send program materials** to school principals and School Champions to align roles and expectations
  - **Share best practice** recycling infrastructure guidelines
- **Train school influencers:**
  - **Conduct formal trainings on key sponsors' specific responsibilities** and **an education module[1] on basic principles of recycling**
  - Provide sponsors with a **list of key action items**
  - **Encourage sponsors to collaborate** with each other
  - Assist sponsors to **adjust and customize the program** based on their school's unique situations

Post summer and ongoing activities

- **Regular Check-ins:** ongoing support and adjustment
  - **School district gets data and feedback** from school influencers on the program's progress
  - **Address concerns** raised by influencers and stakeholders
  - **Acknowledge influencers** for their support
- **KPI Assessment:**
  - Gather quarter/annual data and **compare results to goals** to identify areas of improvement
  - **Communicate results** to school influencers and turn data into actions
  - **Continuously monitor, evaluate, and refine KPIs** based on program progression

Note: [1]Details on the education module are included in appendix

How: Leverage a range of communication channels to meet the specific needs of the content and target audience

	Principal & Champion	Faculty	Staff	Students	Community
Targeted, high-priority channels	• **Dedicated meetings** between district and school leaders	• Present at **monthly faculty meetings** • **Incorporate recycling** into mandatory **summer break teacher trainings**	• Allocate a portion of staff meetings **to provide continued trainings** • **Hold workshop with staff** to co-create new back-end processes	• **Leverage mandatory assemblies** to present educational programming • Incorporate education into **curriculum**	• Recycling themed school events **open to the community** • **Present at PTO/PTA meetings** to increase parental buy-in
Broad contact channels	• **Kickoff presentation** detailing program and specific roles • **Checklist** for school specific waste audit • **Written action plan / timeline** to guide rollout and communication to staff	• **Online education resources** teachers can refer to during rollout • **Bulletin / newsletter** with helpful resources / tips	• **Posters with new back-end procedures** placed in staff breakrooms or common areas • **Recycling facts and tips** sent to staff members weekly	• **Website with lessons** that students can reference after in-class instruction • **Posters in hallways**–may be stock posters or student made • **QR codes** near disposal stations	• **Email newsletter to parents/community** stakeholders • **Public announcements** during local news / in newspapers

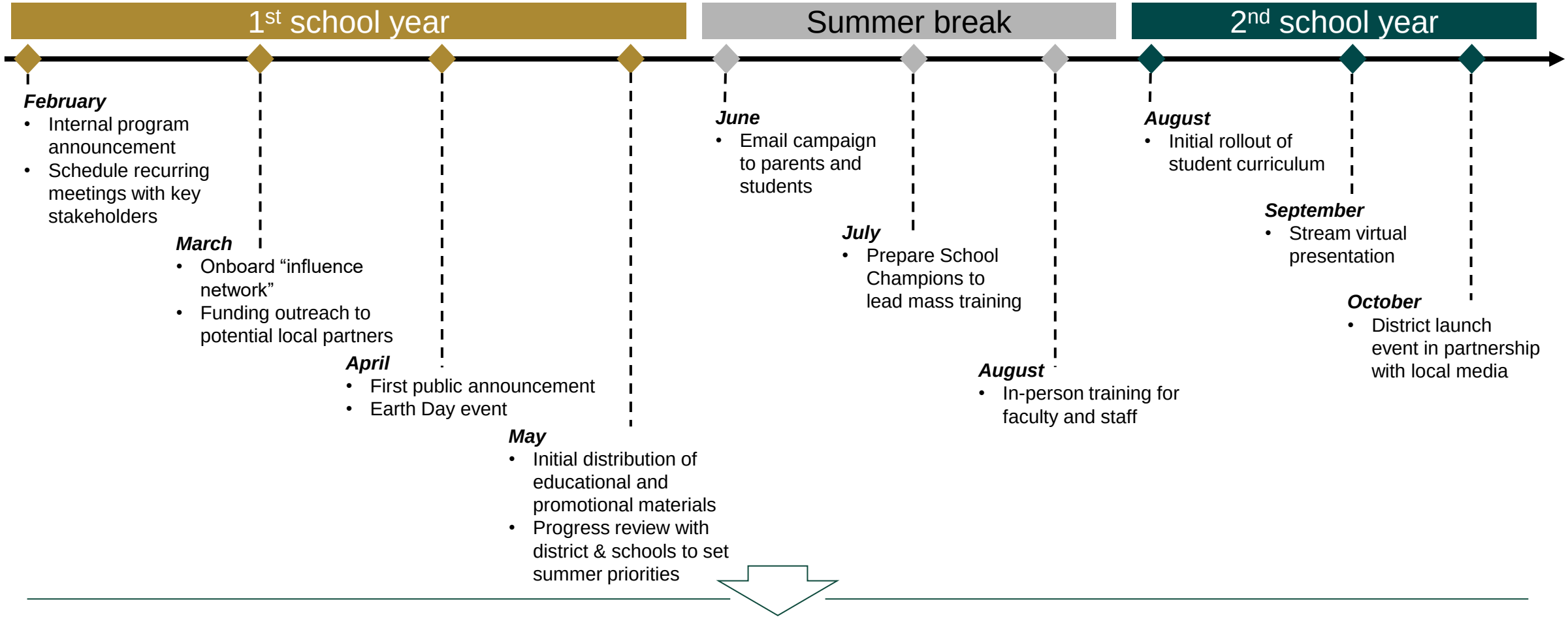
Source: Oceanside Unified School District; TECQ; https://iwrc.uni.edu/sites/default/files/reginaSchoolCaseStudy.pdf

When: Communication content will vary over the long term to align with the phasing of the rollout

/NON-EXHAUSTIVE

	Year 1 *Recycling program implemented*	Year 2 *Cardboard management and educational composting programs implemented*	Year 3 *Full-scale composting program implemented*
Principal & Champion	• **Communicate timeline** of program rollout; **detail roles and delegate responsibility** over duration of program	• **Align with custodial resources** on the new disposal procedures that will be needed to introduce the cardboard baler	• **Introduce composting plan** to custodial resources • **Maintain an open dialogue with school district** on 3rd party hauler needs for composting
Faculty	• Train teachers to incorporate recycling programming into the curriculum and emphasize role as **recycling role models**	• **Incorporate feedback from previous year** into the student curriculum • Detail faculty roles in maintaining **vermicomposting bins**	• **Incorporate composting education** into teacher training and student curriculum • **Expand sustainability curriculum topics**
Staff	• Train custodial and kitchen staff on **new back-end processes** and other staff members and administrators on their roles	• **Train custodial and cafeteria staff** to collapse cardboard boxes, centralize cardboard collection, and use balers	• Detail **custodian and kitchen staff members' roles** in composting program once finalized
Students	• Emphasize future benefits of **proper disposal** of recyclables and composting • Seek student volunteers to **join Green Team**	• Communicate **students' role in vermicomposting** • Reiterate **positive impacts** of recycling	• Emphasize **benefits of composting program** • **Reward students / publicize interschool competition** to maintain excitement
Community	• **Instruct parents to reinforce positive behavior at home and publicize program rollout** to seek local business partners	• Regularly **communicate program successes** to external stakeholders and the local community	• Instruct parents and local businesses on **how to compost**

When: Many of the potential rollout events for the district-wide launch will require an elevated level of support

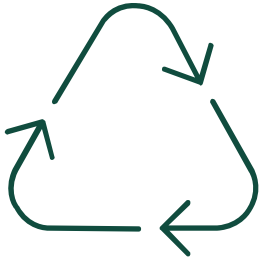


Leverage the communications department's expertise and support to ensure clear and consistent messaging across all channels

3 main exemplary goals for school district's waste program

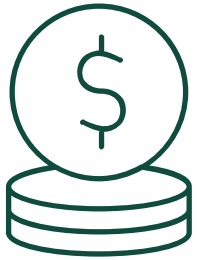
Rollout the program across the district

- Enroll district schools into new recycling, composting, and cardboard baling programs
- Maintain participation over the long-term



Divert waste from landfills

- Decrease the amount of waste sent to landfill through reducing, reusing, and recycling efforts
- Catalyze initial step-change in progress against disctrict's zero-waste ambition



Optimize waste costs

- Capture savings by optimizing collection & infrastructure costs
- Generate new sources of value from recyclables and compost

Clear metrics are critical for district's Sustainability Team to monitor performance & assess impact made by schools

KPI can provide district management with a holistic view of program health

- Monitor district-wide **performance in comparison to program goals**
- Provide **effective & efficient status reports** to key stakeholders
- Drive **timely, data-driven management intervention**

Output often structured as a dashboard

KPIs enable schools to be held accountable & align their actions with North Star goals

- **Clarify the mission and agreed goals** for the local teams
- **Drive motivation and engagement** through transparency and shared success
- **Build alignment** between district priorities and the actions taken at the school-level

Output often a scorecard or goal sheet

Effective KPI align with core design principles and primary program goals

Strategic

- KPIs to be derived from school district's **future vision** and strategic **objectives**
  - E.g., Rollout the new program, divert waste from landfills, optimize costs

Balanced

- KPIs to provide a **full picture** of the health of the waste program in a balanced manner
  - E.g., strike a balance between optimizing for costs vs. waste diversion

Focused

- KPIs to be **concentrated** on **measures** that **drive the majority of value**
  - Keep the list of KPIs short by focusing on what truly matters

Practical

- KPIs to show a high level of **day-to-day practicability** – easy to measure/ to understand/ to compare/ to update
  - Sacrifice perfection for pragmatism when needed

Cascaded

- KPIs to be cascaded to ensure the **right people have the right details**
  - Consider which KPIs should be shared with which audience

Actionable

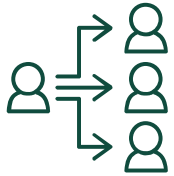
- Management **must be able to act** in accordance with the KPI results
  - E.g., re-allocate resources, alter program design, establish new initiatives, etc.

Based on best-in-class programs, we recommend 6 KPI for school district's new waste program

Strategic goal	Metric	Frequency	External publication	Data source
Rollout the program	% of schools actively participating in the new waste program	Monthly	✓	School Champions
	% of population that understands and supports the new waste program	Annual		Student, faculty, and staff survey
Divert waste	Estimated tonnage of waste landfilled, recycled, and composted	Semi-annual		Comprehensive hauler report or estimates performed by School Champions
	Uptick in diversion rate	Semi-annual	✓	
Optimize costs	New value generated (direct & indirect cost savings, new revenue, etc.)	Semi-annual	✓	[School district finance] with input from School Champions
	Excess hauling costs (unexpected pick-ups, contamination fees, etc.)	Monthly		[School district finance]

These KPIs can also be reported by the auditor

Clear roles and responsibilities should be established for data collection and reporting



Leverage School Champions where possible

- School Champions are the **key school-level resource**
  - Collect on-the-ground observations & data
  - Publish updates to school district
- Often the **point of authority** for KPIs that are **easily accessible**
  - E.g., participation, compliance, and high-level waste audits (example LINKED)
- Ensure **training includes a module on measurement** of the assigned KPIs

Consider building reporting responsibilities into hauler RFP

- Haulers may offer **waste reporting** based on **pick-up volumes**
- Upcoming **hauler negotiations present an opportunity** to negotiate waste reporting as part of the pick-up process
- Although likely to be an added cost, this would **provide critical data points without straining internal resources**

Dedicated auditors can bring expertise & a new point of view

- A **central school district or 3rd party auditor** can help **identify new opportunities** and **disseminate best practices**
  - Additionally, external audits often provide a more detailed waste report than those performed by the School Champion
- If it is a large school district, it is **likely infeasible** to provide each school with an **annual external audit**
- **Recommend selecting [5-10] schools every year** for external audit to serve as a **representative sample**
  - Consider funding through savings

Source: NYC Schools Guide to Zero Waste; Trash Free Schools Guidebook, A Guide for Implementing a School Recycling Program

Ensure an integrated tracking system is established to streamline reporting and analysis of the KPI

An integrated tracking system offers value assurance and acceleration

Assurance

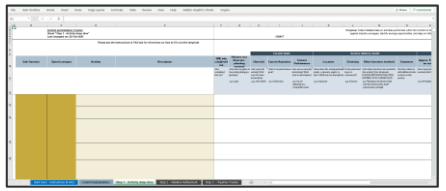
- **Accurate view** of current performance
- **Credible projections** on when milestones will be achieved
- **Transparency** on the status of each initiative

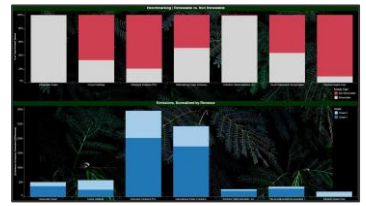
Acceleration

- **Empowerment and accountability** of teams
- Ability to make **well, informed decisions**
- **Bias for action**, driving rapid course correction
- **Increased alignment and less resistance** among leadership positions

Key Considerations

- **Provide School Champions with access** to update their school's KPIs directly
- Ensure **key positions within district and school leadership have view access** to the appropriate pieces of data
- Design a tracking system that aligns with **district's current expertise and skill set**
  - The system can be as simple as **shared excel files** or complex as a **Tableau / PowerBI dashboard**
    > San Francisco Unified School District has a public Tableau dashboard sharing the monthly diversion rate of each school – LINKED





Passionate sponsors with clearly defined roles can help improve accountability and execution

Sponsorship should flow from the top down

School District Leadership

- **Approve and support the future vision** proposed by the district Coordinator
- Meet regularly with School District Coordinator and principals to **offer additional resources and clear roadblocks**

District Coordinator

- **Communicate key program dates, successes, and roadblocks** to receive the necessary support from district leadership and principals
- Meet with school administrators to **detail program goals, delegate responsibilities, and provide immediate next steps**
- Distribute materials with timeline, implementation playbook, and waste audit checklist **across the chain of command**

Principals

- **Engage with school leadership and district Coordinator** to **achieve the goals** of the school's recycling initiative
- **Oversee the program implementation** and assist school leadership in making key decisions throughout program rollout

Champions

- **Main school-level point of contact** for the district Coordinator, conducting audits & **verifying school-specific infrastructure needs**
- **Lead and coordinate education efforts for students and staff**

Plant Operator

- **Execute the logistics of the recycling initiatives** by overseeing the collection and transportation of trash and recyclables and maintaining recycling infrastructures
- **Lead training for custodial staff on new procedures**

Green Teams

- Consist of student & faculty volunteers to **raise awareness for recycling and translate education into action**
- **Assist champions and teachers** to organize project-based learning to further support program rollout

Source: Bain experience

Sponsorship is a core tenant of effective engagement that builds commitment and changes behavior

Sponsorship is visible, credible support for change

- **A sponsor is any leader, who engage in the change** with their teams in ways that **help move them up the commitment curve**

- **A sponsor's responsibility may include:**
  - Help teams understand the case for change & point of arrival
  - Ensure changes are embedded and sustained
  - Dedicate time and secure resources required to mitigate risks
  - Provide adequate support throughout change

Effective sponsorship is based on 4 principles

1. A sponsor's role is to **build commitment to change**
2. **Sponsors understand that change is disruptive,** and the **skills needed are different** from those needed for day-to-day leadership
3. Identifying and mobilizing a **healthy sponsorship "spine"** layer-by-layer is essential to realizing change
4. Sponsors **"cascade" key messages and build sponsorship** throughout the org through the process of enrollment

Sponsorship is a critical lever for successful organizational change. Without it, a change effort will fail.

Source: Bain experience

Onboarding events for sponsors will take place in 4 phases to help smooth transitions into roles

Ongoing support

Pre-boarding

- **Send program materials** to school principals and School Champions to align roles and expectations across different schools
- **Hold a series of workshops to identify passionate sponsors**, who can help onboard other schools
- **Share best practice recycling infrastructure guidelines** to help sponsors prepare for the new recycling system

Orientation

- **Share the vision and mission with key sponsors**; communicate the initiative's benefit and feasibility
- **Clearly define sponsors' roles** and responsibilities and familiarize sponsors with key implementation procedures
- **Schedule regular meetings** to ensure smooth two-way communication channels between sponsors, district leaders, and other stakeholders
- Share support resources and **address concerns raised by stakeholders**

Training and Transitioning

- **Conduct formal trainings on key sponsors' specific responsibilities**, the new recycling system and processes
- **Encourage sponsors to collaborate with each other** as they transition into implementing the recycling program
- Have sponsors **adjust and customize the program** based on their school's unique situations

Assessment

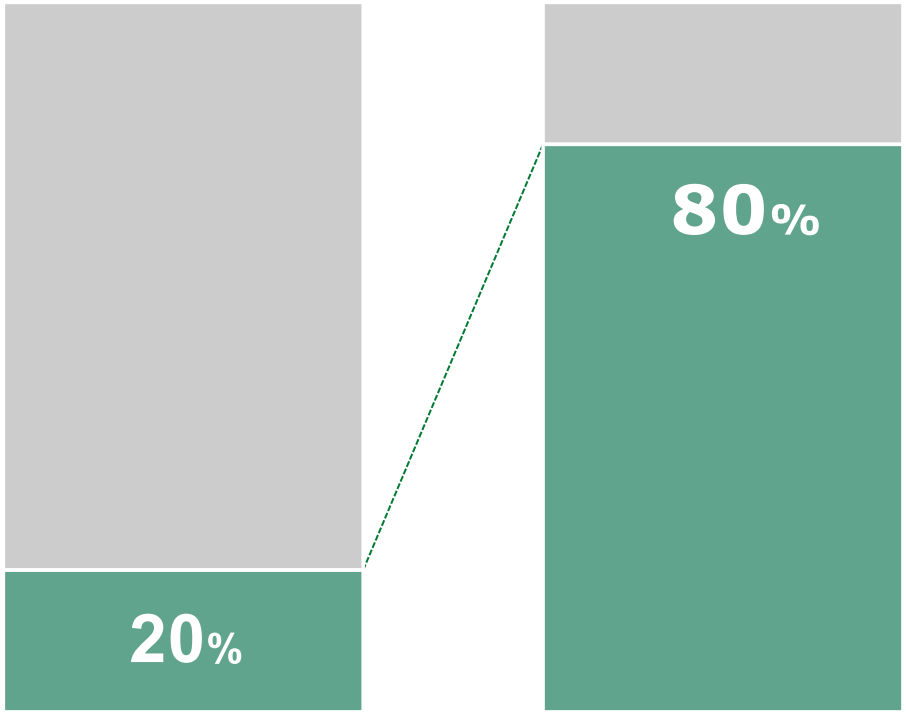
- **Regularly monitor and evaluate the sponsor network** to ensure that it is meeting its goals / objectives and make any necessary adjustments
  - Size of influence
  - Accessibility and support
  - Personal fit and compatibility
- **Acknowledge and thank sponsors** for their support and **keep them informed of the program's progress**

Source: Bain experience, Guide to Get School Administrators On Board with Recycling; Trash Free Schools Guidebook, Roundtable Learning

Sponsorship can be maintained through 6 key behaviors

Behavior	What it means
Remain goal oriented	*Sustain the future vision with North Star goals to keep all stakeholders aligned*
Protect time and attention	*Make this a priority, dedicate your time and attention to the efforts and work to find the best resources at each school*
Nurture your spine	*Prepare your team, school district leaders, and school leaders to sponsor and build a strong, uninterrupted "spine" of commitment*
Sustain the conversation	*Consider those who must change and how you can best reach them, listen deeply through open, two-way dialogues*
Regularly revisit risks	*Encourage early risk identification and support mitigations*
Support the process	*Ensure a fair, transparent, and consistent process so people feel open to contribute*

20% of the measures should cover 80% of the value



Higher efficiency

Sharper focus on what really drives long term value

Simpler, more focused and insightful performance conversations

Timely intervention

Early warnings

Fewer ad hoc data requests

More effective interventions

Integrated tracking ensures aligned approach across all projects in the portfolio

Align on high-level tracking principles

1 Measures of success for the program

Establishes what to work towards

2 Governance principles

Creates the foundation for the tracking system design

3 Tracking enablers (incl. the tracking tool)

Ensures the system is set-up for success

Design tracking systems

5 Baseline (point of departure) & targets

Aligns where you are going and where you are starting from

6 Hierarchy of how projects roll-up to targets

Confirms impact & drives accountability

7 Project tracking methodology

Establishes what we will measure and how we will measure it (KPIs, metrics)

8 Tracking tool alignment & dashboards

Supports the reporting of insights and data visibility

Drive the tracking system

9 Pilot, test and scale processes

Confirms tracking works as planned before widely scaling

10 Project team onboarding

Ensures alignment and consistency in data input & tracking

11 Run and improve tracking system (on an ongoing basis)

Ensures tracking is monitoring the right things to drive action

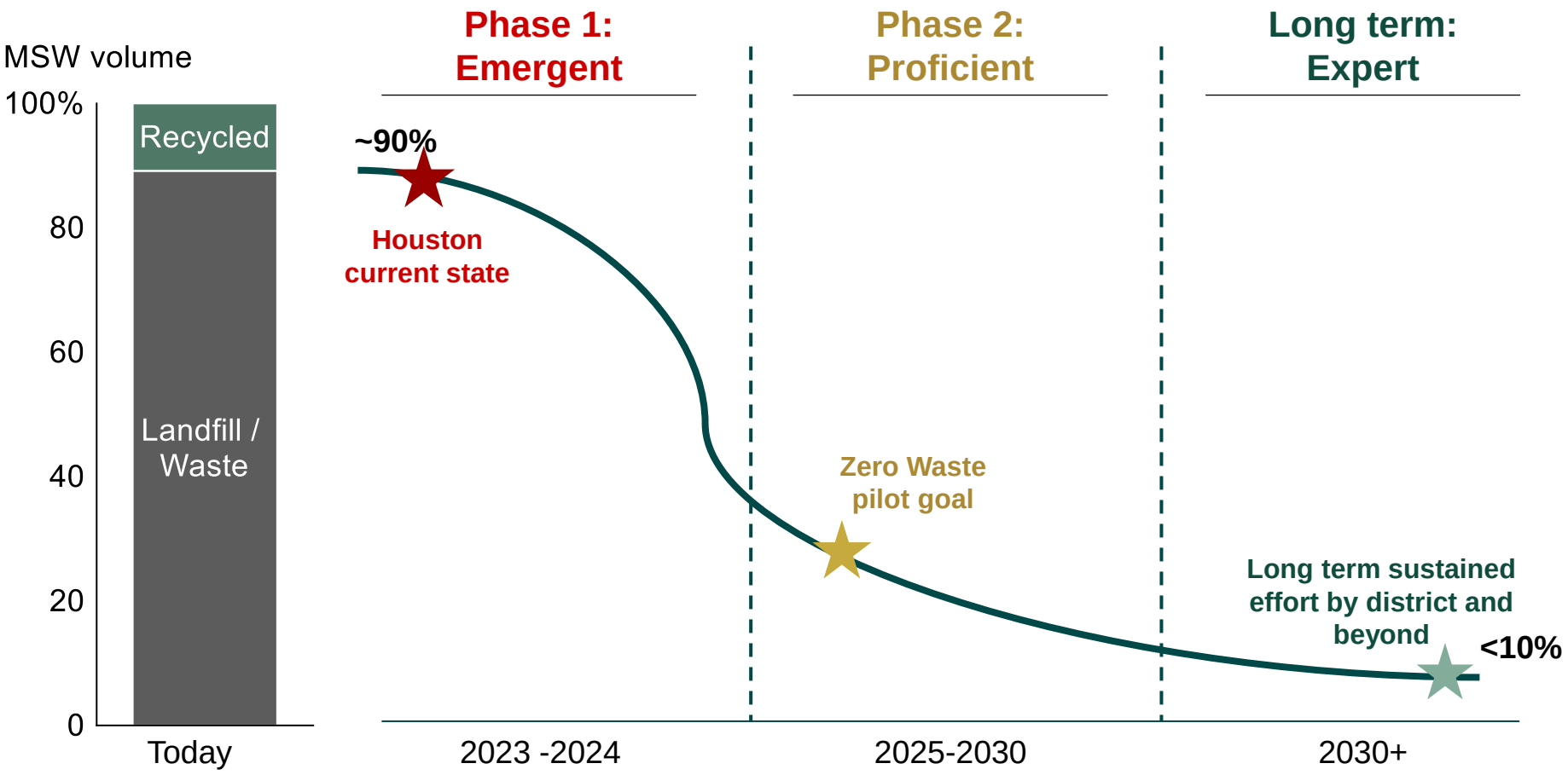
Source: Bain experience

ALLIANCE TO END PLASTIC WASTE®

Implementation Timeline

- Program roadmap and ramp up options

Reminder: The path to “Zero waste” is a long-term journey; “Zero Waste” schools will bring us much closer to our goal



Phase 1:

- Inflect opportunities identified
- Investments across education, infrastructure and reinforcing behavior

Phase 2:

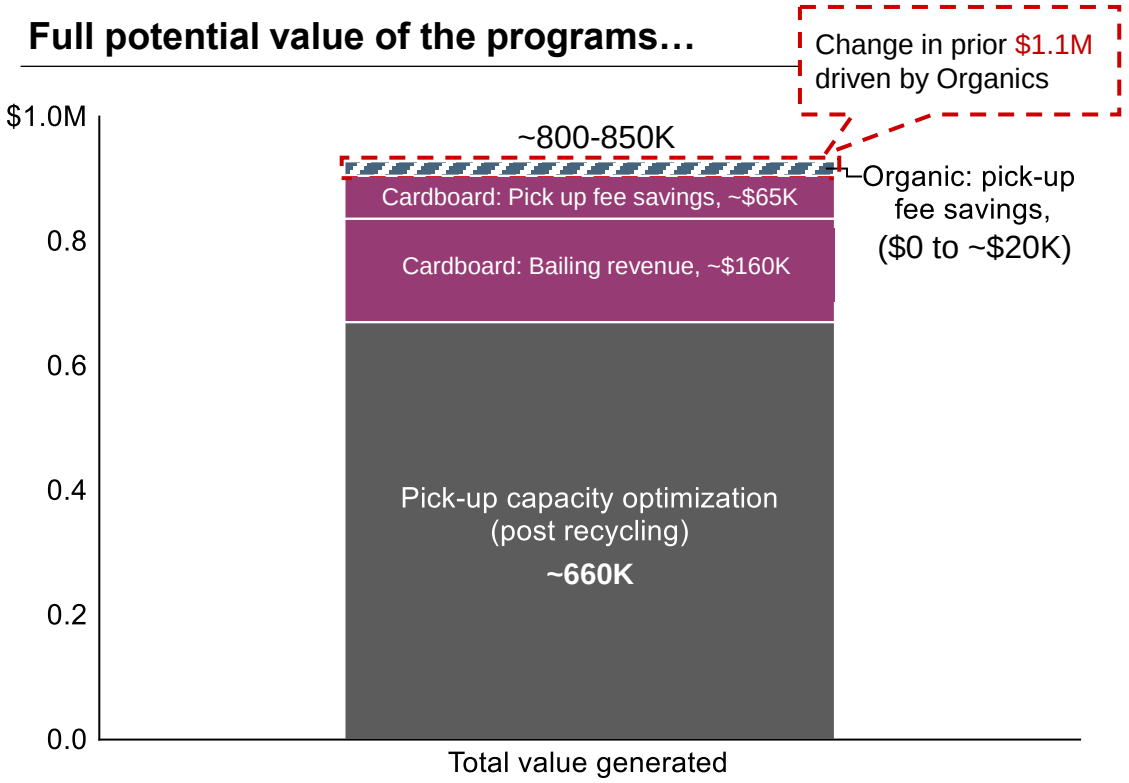
- Recycling best practices enabling farther reaching behavior change
- Begin implementing other systematic changes (i.e., vendor negotiations)

Long term:

- Stricter regulations (e.g., banned materials / city wide mandates)

Reminder: Total value generated is driven by three main levers

Full potential value of the programs…



…is driven by three main levers

Organic waste management

- Organics removal accounts for up to **~5% of full potential value, ($0 to ~$20K)**
- Capture of potential **will depend on chosen options** and will not be recognized in year 1

Options discussed in later pages

Cardboard waste management

- Cardboard removal + sale accounts for up to **~25% of full potential value (~$225K)**
- Capture of potential **will depend on ramp up of cardboard diversion** and unlikely to be recognized in year 1

General recycling and pick-up optimization

- Reduction in excess capacity accounts for up to **~70% of full potential value (~$660K)**
- Capture of potential **will depend on right sizing hauling to fit individual school needs**

The timeline to implement activities across these levers will impact the pace at which we realize value at stake; Focus is to discuss and align on phasing of these levers over 2-3 years

*Please note all figures are false and purposefully used as a directional example for a large school district

Method of school district program launch directly affects timetable of investments, value generation, and activities

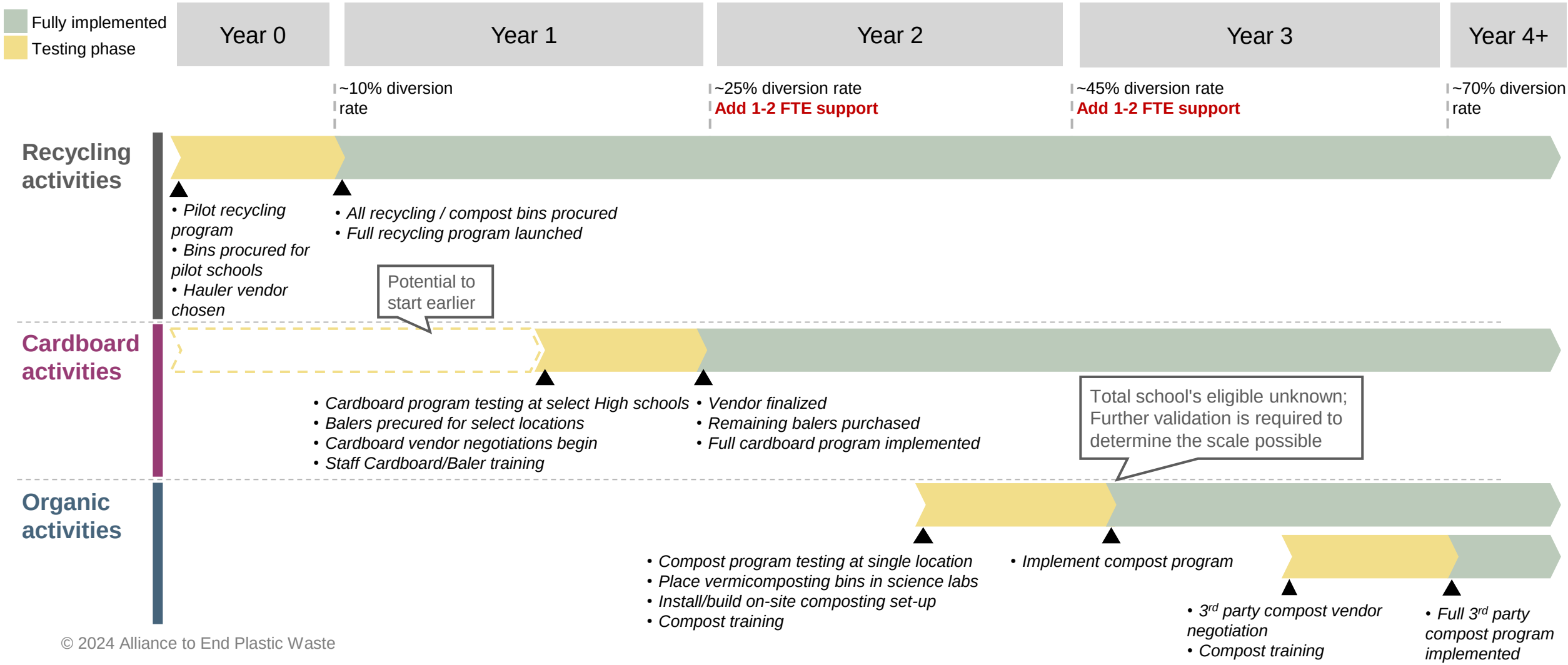
Aggressive ramp-up

Phased ramp-up

	Aggressive ramp-up	Phased ramp-up
Strengths	• Full value potential realized sooner • Less rounds of training conducted simultaneously • Only one round of fundraising required	• Opportunity to refine program over multi-year ramp-up period • More time to train / educate key stakeholders • Easier to evaluate the effectiveness of each aspect of the program
Tradeoffs / risks	• Risk of pushback due to level of sudden change • Lack of district personnel resources to fully manage program • No “trial and error” period • Shorter timeline to find, evaluate, and approve vendors • Difficult to isolate the standalone impact of each program component	• Achieving full potential of program is delayed • Multiple training periods may be required • Possible loss in momentum from spreading launch over longer timeline

A phased, “crawl, walk, run” ramp-up is recommended to avoid rushed implementation and maximize program success

DIRECTIONAL



A major driver of total value generated will be approach related to organics collected

Organics collected

Compost

A **Landfill**

Maintain status-quo and divert organics collected back to landfill

B **Educational composting**

Use compost to support education curriculum *(e.g., vermicomposting: use worms to compost on a small scale to supplement the science curriculum)*

C **Compost on-site**

Invest in commercially available bins to compost onsite

MOONSHOT

Zero Waste Houston

COMPOST

D **3rd party service**

Contract a 3rd party hauler to transport organic waste to a commercial facility

Other

Focus on reduction on reuse *(e.g., reuse tables in cafeteria; donate food waste local programs)*

Each composting option has a unique set of strengths and tradeoffs for school district

	Compost options	Max volume of district organics collected	Max upfront investment / costs	Max organic pickup-fee savings
A	**Landfill**	Up to 100%	$-	$-
B	**Educational composting**	~0-2%	~$100K[1]	~$5K[2] (excess volume goes to option A)
C	**On-site composting** (high school only)	~2-10%	~$120K	~$15K[2] (excess volume goes to option A & B)
D	**3rd party service**	Up to 100%	$-	~$20K[2,3]

Assumed 2x 3-bin setup per campus

Example timeline

A **Year 1-2:** recommend separating organic waste and emphasizing waste reduction to build the habit while additional composting infrastructure needs are investigated

B **Year 2-3:** Educational composting kicked off, increasing upfront cost up to $100K; Although savings is small, implementing will help garner excitement in students and build education around composting

C **D** **Year 3+:** Evaluate pursuing On-site composting or 3rd party service

3rd party service is not cost feasible in the short term, however likely to become value additive if right ecosystem is achieved

Note: [1]Directional estimate assuming up to 1 bin in every eligible room; [2]Further validation needed to verify savings; [3]~80% discount from current 3rd party hauler fees required to achieve $760K in savings,

*Please note all figures are false and purposefully used as a directional example for a large school district

A

Use of a 3rd party service is much more attractive in the longer-term

An ecosystem of partners will enable district's composting program to reach full potential

Public Funding

- **Partner with City** for hauling or program financing
- Apply for **local, state, and federal grants**
  - USDA awarded $10.2M in '22 to fund strategies for food waste reduction & compost programs

Hauling services

- Leverage scale of school district in **contract negotiations**
- Reduce the amount of **food waste generated** by each school

Compost processor

- Partner directly with **composting facilities,** instead of a 3rd party hauler
- **Send organics to TX farms** who can convert the material to compost and use directly onsite
- **Negotiate to get a portion of compost back** for use on school district school grounds or a **revenue share in sales**

Sales and sources of demand

- **Brand as "district-sourced" compost** for end markets, with a percentage of revenue returned to district
- **Offer TxDOT / other government agencies** a purchase agreement for district compost upfront
  - TxDOT spends an estimated $1M on compost per year
- Allow **parents to sign up** to buy bags of compost

Other outlets

- Send organics to a processor to **grind for use as animal feed**, e.g., GrubTubs is an Austin-based company with plans to expand throughout Texas

Source: Food Waste in Schools: A Pre-/Post-test Study Design Examining the Impact of a Food Service Training Intervention to Reduce Food Waste; USDA; Bain experience

D

Use of a 3rd party service may not be feasible in the short-term due to higher cost vs alternate landfill option…

/ DIRECTIONAL ESTIMATES

Landfill

3rd party service

After general recycling and pick-up capacity optimization

2000 lbs. of organics (1 ton) weekly

~1 additional bin

~3 pickup per week

~$340 per month

2000 lbs. of organics (1 ton) weekly

~4 drums[1]

2 pickup per week

~$900 per month

Although a 3rd party service is the "easiest" option but may not be feasible given program goals

Note: (1) based on 3rd party service drum capacity of 300lbs of organic waste

*Please note all figures are false and purposefully used as a directional example for a large school district

…But a 3rd party becomes much more attractive in the long-term once we utilize the right value-driving levers

Creating notable positive value through different levers…

2000 lbs. of organics (1 ton) weekly

Base monthly price expected from a 3rd party service to handle 2000 lbs. of organics weekly

Up to 60% reduction from contract negotiations
(break even with landfill costs)

Up to 20%[1] reduction from fertilizer savings
(e.g., Supplies organics and buys fertilizer produced at discounted rate; Sell fertilizer produced to commercial partners; Co-brand fertilizer as a source of new revenue)

…can significantly increase feasibility over time

2000 lbs. of organics (1 ton) weekly

~$800 per month

~$340 per month

~$150-250 per month

Net monthly cost after benefits

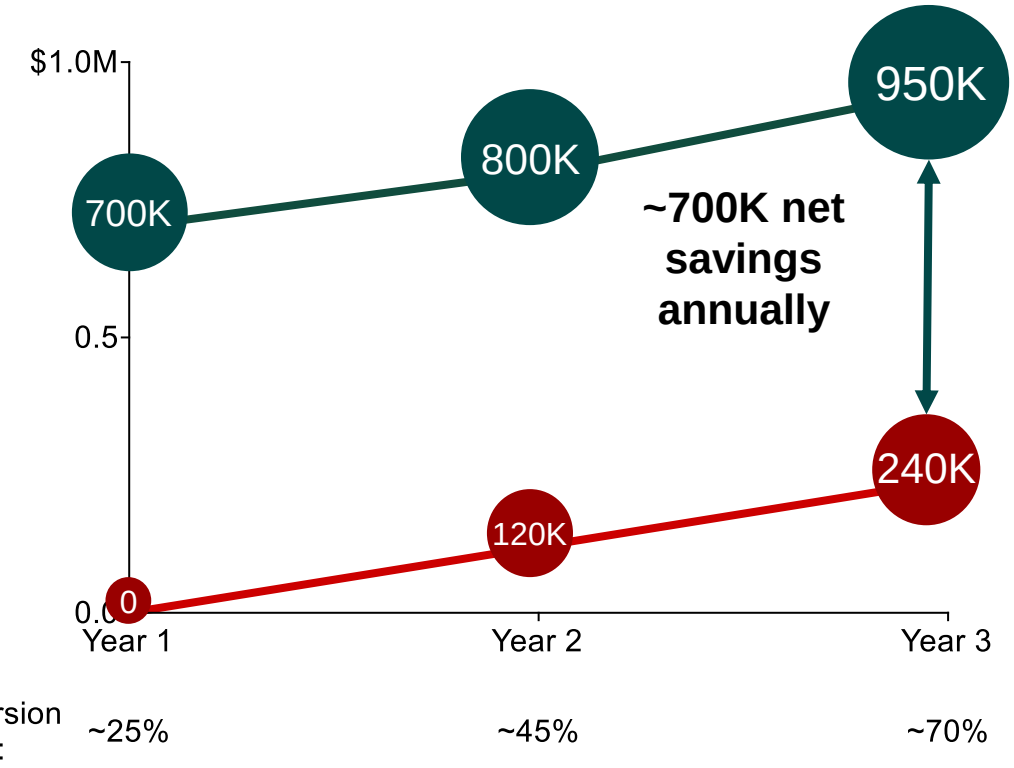
~1/2 the cost of sending to landfill

Note: [1]Directional estimate based on upside of various options

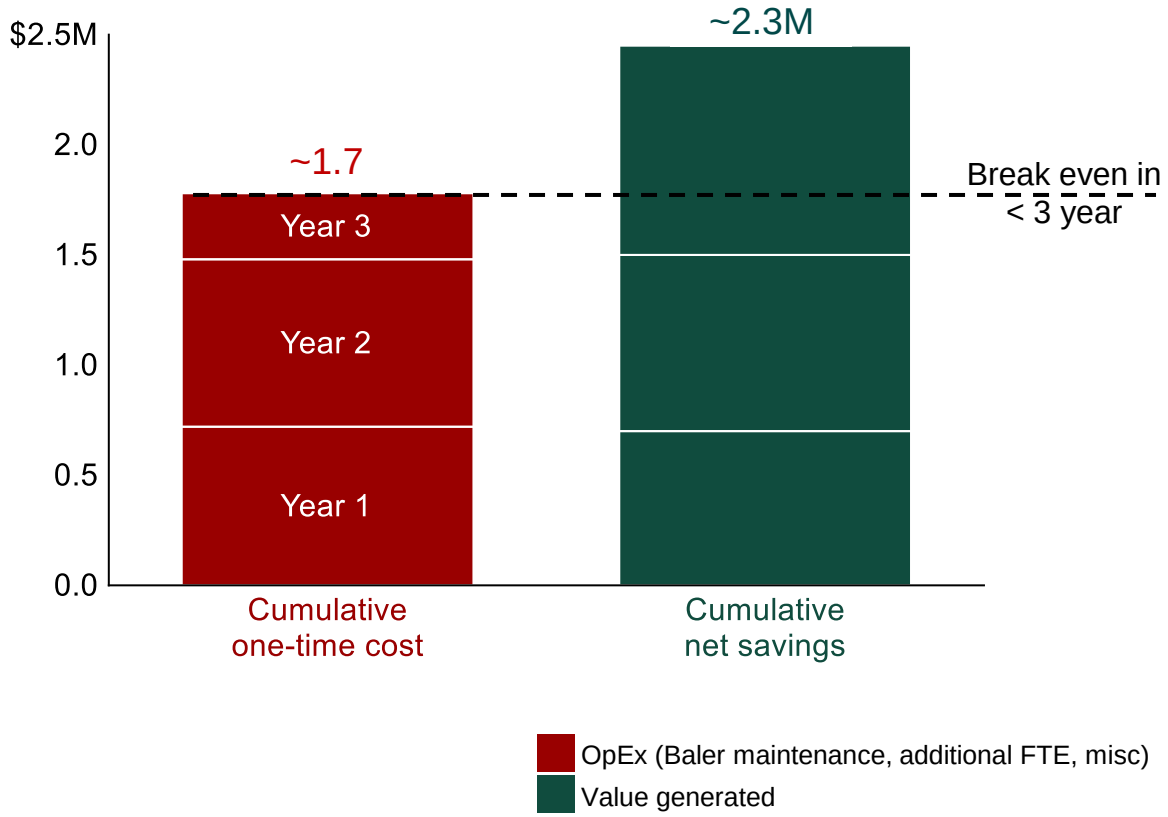
*Please note all figures are false and purposefully used as a directional example for a large school district

Phased ramp-up of program has potential to break even and start generating ~700K net annual savings by end of year 3

By year 3, the program can start delivering up to ~700K in net savings annually



Total cumulative savings are expected to break even with total one-time investments in under 3 years



*Please note all figures are false and purposefully used as a directional example for a large school district

A decision on approach to program launch is likely needed by the school district

Finalized launch plans will be key for driving effective stakeholder engagement…

Engage with larger **district** team

Secure top-down buy-in from key school district stakeholders based on a clear business case & future vision

Engage with key stakeholders

Engage on pilot design and potential future value levers resulting from the pilot

Engage with **other local partners** to solicit funding support

…and accurate detailed design during program mobilization

February - March
- Finalize business case, funding request, and program targets
- Standup the required central district resources and administrators
- Draft the detailed execution playbook and rollout plan
- Announce program to the media and key partners

April - May
- Onboard all Sustainability Coordinators and Green Teams
- 2nd announcement of pilot to Media (Earth Day)

June - July
- Perform risk assessment on the pilot design
- Procure and install the necessary collection infrastructure
- RFPs and bids collected
- Launch promotional campaigns ahead of the new school year

Decision will significantly impact the waste volume used in the RFP

August - October
- Finalize feedback from Green Team's on school customization
- Assist Green Teams with onboarding their entire school's population
- Confirm all schools are prepared for the new launch day logistics

November
- New hauler contracts start

Excess organics: Donating excess organic waste is a viable option at scale but will require additional time and planning

Starting a composting donation program is rewarding but comes with challenges

Considerations

- Feeding animals is the 3rd tier of EPS's food recovery pyramid and is preferred over sending to landfills
- It's often cheaper to donate food scraps to feed animals vs hauling to landfills
- Food scraps can be donated to any producer of animal or pet food (e.g., animal farms, zoos, etc.)

Common challenges

- **Eliminating contamination:** Organics stream can only be food waste and must be void of all packaging materials and other contaminates
- **Finding the right partner:** Finding an interested local animal farmer can be difficult, especially near large urban areas
- **Additional equipment:** Investment in additional refrigerated storage and processing equipment may be needed to process scraps before transportations

Success stories

Rutgers university

- Due to dining operations generating more waste than facilities could contain, Rutgers started diverting food scraps to a local farm for use as animal food
- Rutgers now pulverizes (using a pulper) and diverts ~2200 lbs. of organics per day
- Farm charges $30/ton opposed to ~$60/ton Rutgers pays to haul to landfill, saving Rutgers ~$100K annually

MGM Resorts

- MGM Resorts collects surplus food from 165 restaurants and 11 employee dining rooms across 11 resorts
- Diversion has increased rapidly and now collects ~28M lb. annually
- Surplus is collected and processed by two users: ~50% goes to a local farm for use as animal food; ~50% goes to a local composting facility

Resources for reference

Activities
Examples from best-in-class schools/districts

Resources for Recycling Setup/Infrastructure:

Topic	Link
Signage creation	https://recyclingpartnership.org/diysigns/
Example resource on on-campus composting	https://www.sandiegocounty.gov/content/dam/sdc/dpw/SOLID_WASTE_PLANNING_and_RECYCLING/Files/Onsite%20Composting.pdf
Example guide to set up green team	https://indd.adobe.com/view/a1b52465-8a56-49a9-9f53-e045f85fa35a
Example of educational resources (San Diego)	https://www.sandiegocounty.gov/dpw/recycling/schoolrecycling.html
Example of educational resources (NYC)	https://www.grownyc.org/rcp/rrreducation

Resources for Roles & Responsibilities/Training:

Topic	Link
Signage creation	https://recyclingpartnership.org/diysigns/
Example resource on on-campus composting	https://www.sandiegocounty.gov/content/dam/sdc/dpw/SOLID_WASTE_PLANNING_and_RECYCLING/Files/Onsite%20Composting.pdf
Example guide to set up green team	https://indd.adobe.com/view/a1b52465-8a56-49a9-9f53-e045f85fa35a
Example of educational resources (San Diego)	https://www.sandiegocounty.gov/dpw/recycling/schoolrecycling.html
Example of educational resources (NYC)	https://www.grownyc.org/rcp/rrreducation

Further resources – Comprehensive playbooks (1/2)

/PRELIMINARY /NOT EXHAUSTIVE

	Resource	Description
Comprehensive playbooks	NYC Schools Guide to zero-waste	• Detailed guide outlining how NYC schools can implement **best practices for school recycling and sustainable waste management**
	Texas School Recycling Guide	• Step-by-step guide to **setting up a school recycling program** and maintaining it in the long-term; detailed tips on **student engagement** and how to apply the **Reduce, Reuse, Recycle, Rebuy principles**
	Trash Free Schools Guidebook	• **Combines education with action** to create a system for K-12 schools to reduce trash footprint
	A Guide for Implementing a School Recycling Program	• Step-by-step guide **to implementing a school's recycling program**. Guide focuses on reduce, reuse, recycle
	Tools to Reduce Waste in Schools	• Step-by-step guide to **start or expand an existing waste reduction program** and manage stakeholder engagement

Further resources – Comprehensive playbooks (2/2)

/PRELIMINARY /NOT EXHAUSTIVE

Comprehensive playbooks

Resource	Description
Waste Reduction and Recycling Best Practices Guide for Schools	• Overview of **King County Green Schools Program**. Focuses on best practices for education, outreach, system changes, waste reduction, recycling, and composting
Guide to Get School Administrators on Board with Recycling	• **Materials covering how to onboard key stakeholders and influencers** (principals, administrators, staff, volunteers) in a new school recycling program
Oceanside School District Zero Waste Schools Program	• **High-level phased action plan** to roll out Zero Waste schools initiative in elementary / middle schools
Fairfax County Government and Schools Zero Waste Plan	• Comprehensive plan with **detailed checklists for completion**

Further resources (1/2)

/PRELIMINARY /NOT EXHAUSTIVE

	Resource	Description
Standing up a Green Team	The Green Team Guide	• Outlines ways to tackle waste and recycling issues by **mobilizing students**. Includes green team formation, action, and next steps
Conducting a Waste Audit	Waste Audit Guide	• **Waste audit requirements, procedures, and data sheet** examples
	Guide to Conducting Student Food Waste Audits	• **Guide to audit student food waste**, including planning, resource requirements, instructions for interviews, data collections, and food waste prevention ideas
	San Francisco Unified School District School Waste Report	• Example of **online dashboard to track school waste** in SFUSD. Information includes diversion rate, bin placement and collection, waste breakdown by school and time

Further resources (2/2)

/PRELIMINARY /NOT EXHAUSTIVE

	Resource	Description
Training and education	A Zero Waste Curriculum	• Example **recycling lesson plans** (for elementary school students)
	Recycling Curriculum Teacher Handbook	• Example of **recycling topics and education materials** (lesson plans for students)
Signage and posters	DIY Signs for Recycling	• Open-sourced templates that can be used for **designing recycling signage**
Waste stations and collection bins	Georgia State University Centralized Waste Stations	• Examples of **centralized waste stations on a campus**

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THANK YOU!