



2020 Annual Report – Sustainability

September 2021



Agenda

- Sustainability at BART
- Overview of Sustainability Action Plan
- 2020 Highlights & Case Studies
- Performance Metrics & Targets
- Action Status Update
- Priorities & Opportunities
- Appendix

Sustainability at BART

- Transportation accounts for 40% of greenhouse gas (GHG) emissions in CA, and of those, 70% are produced by passenger vehicles¹.
- By providing over 409,000 passenger trips per weekday², BART supports a shift from driving alone to transit and thereby contributes significantly to the reduction of GHG emissions from Transportation in the Bay Area.
- In addition, BART is committed to integrating sustainability into its daily operations and future transit investments.
- BART published a [Sustainability Action Plan \(SAP\)](#) (Dec 2017) which includes specific types of projects that BART has/is/will implement to pursue and achieve the American Public Transportation Association (APTA) sustainability categories goals and BART specific targets.
- BART publishes annual reports documenting our progress on the SAP
 - [2018](#), [2019](#), [2020](#)

¹2020 CA Air Resources Board (CARB) *California Emissions Trends Report: 2000 – 2018*

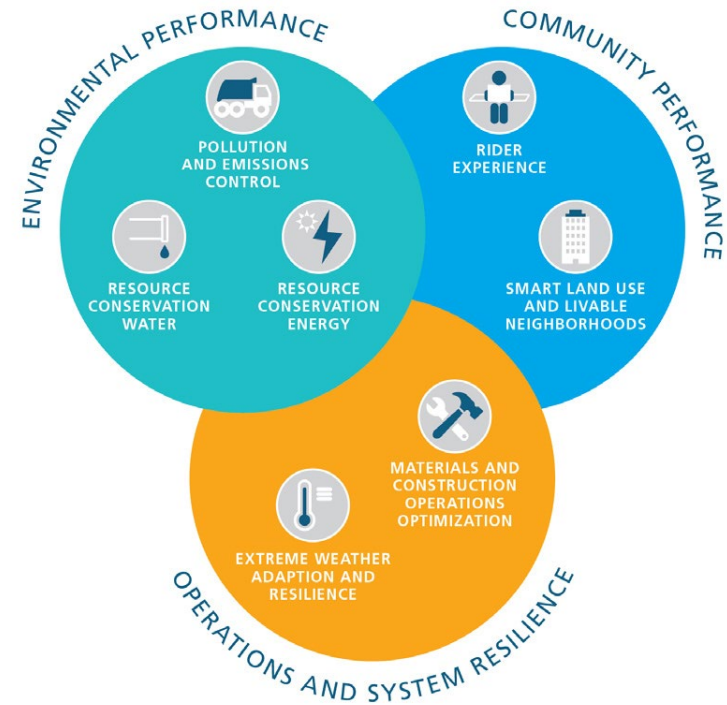
Sustainability Action Plan Overview

TARGETS

- Time Horizon: 2015 (baseline year) to 2025
- Types of targets:
 - Commitment – based on commitment to high scoring actions, implementation is constrained by potential funding limitations
 - Aspiration – assumes full plan implementation and fewer budget constraints

ACTIONS

- The Plan contains **55** Actions (**118** sub-actions) covering the seven Sustainability Categories that align with American Public Transportation Association (APTA) Sustainability Indicators
- **20** Priority Actions are highlighted as near-term focus areas
- See the 2020 report for current status on all Actions



Different BART departments lead in the implementation of Actions in their area of control

BART 2020 Sustainability Highlights



\$700 million

issued in green bonds to invest in climate-friendly mass transportation



\$3.54 million

awarded to improve station access as part of the Safe Routes program



65.9 mpg

fuel efficiency equivalent in a BART car as compared to average single-occupancy car



280

Fleet of the Future Cars in operation



26 lbs

of CO2e emissions avoided per average round trip, which is equivalent to about 30 miles driven in a passenger car



100%

of BART's contracted electric supply was GHG-free



Completed two transit-oriented development (TOD) projects

which added 602 new residential units, of which 56 are affordable



2 tons
(estimated)

of oily rags diverted from waste



92

secure on-demand electronic BikeLink locker spaces purchased and installed



Free masks and hand sanitizer

offered at stations systemwide

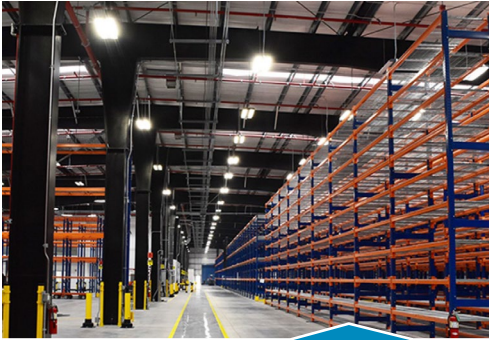


Berryessa and Milpitas stations

opened with sustainability features

Case Studies

See 2020 Report for detailed writeups



**Hayward Maintenance Complex
Central Warehouse achieved
LEED Silver Certification**



Implemented Clipper-only fares



**MacArthur Transit Village
completed**



**Used goats to help mitigate
wildfire risks**





**Released first Power Content
Label, which profiles BART's
electric supply portfolio**



**\$191 million from the Affordable
Housing and Sustainable
Communities grant program**


Performance Metrics and Targets

From 2020 Report

	Units	2015 Baseline	2016	2017	2018	2019	2020	Target 2025	
<div> RESOURCE CONSERVATION: ENERGY & GHG EMISSIONS</div>									
Total energy use	Megajoules (MJ) / vehicle revenue mile (VRM)	21.19	19.93	20.52	20.89	21.18	23.70	Committed 19.52	Aspirational 19.19
Total greenhouse gas (GHG) emissions	Metric tons of carbon dioxide equivalent (MT CO2e) / thousand VRM	1.92	1.65	0.23	0.25	0.26	0.11	Committed 0.31	Aspirational 0.24
<div> RESOURCE CONSERVATION: WATER</div>									
Total potable water use	Gallons / VRM	0.64	0.65	0.86	0.95	0.85	1.00	Committed 0.43	Aspirational 0.38
<div> SMART LAND USE AND LIVABLE NEIGHBORHOODS</div>									
Residential units	# of units built (cumulative since 1993)	1,416	1,506	1,975	1,975	2,649	3,251	7,000	
Affordable residential units	# of affordable units built (cumulative since 1993)	256	346	613	613	845	901	2,400	
Office/commercial square footage	Square feet built (cumulative since 1993)	188,590	188,590	194,590	194,590	637,590	643,690	1,000,000	

Performance Metrics and Targets

From 2020 Report




	Units	2015 Baseline	2016	2017	2018	2019	2020	Target 2025
<div> SMART LAND USE AND LIVABLE NEIGHBORHOODS</div>								
Mode share: active (walking and bicycling)	%	44%	Pending Station Profile Survey planned for 2022					52%
Mode share: shared mobility	%	29%	Pending Station Profile Survey planned for 2022					32%
Mode share: drive & park	%	27%	Pending Station Profile Survey planned for 2022					16%
GHG emissions associated with passenger access to the station	%	TBD	Pending Station Profile Survey planned for 2022					-24% reduction from 2015 baseline
<div> RIDER EXPERIENCE</div>								
Quarterly reporting of safety and performance indicators		Complete ¹						Complete
Has BART met all adopted Performance Standards for Safety and Patron Comfort?		No ²						Yes

¹ Quarterly reports on safety and performance indicators can be found at: [Reports | bart.gov](https://www.bart.gov/reports)

² Performance Standards for Safety and Patron Comfort can be found at: [Safety | bart.gov](https://www.bart.gov/safety) and [Experience | bart.gov](https://www.bart.gov/experience)

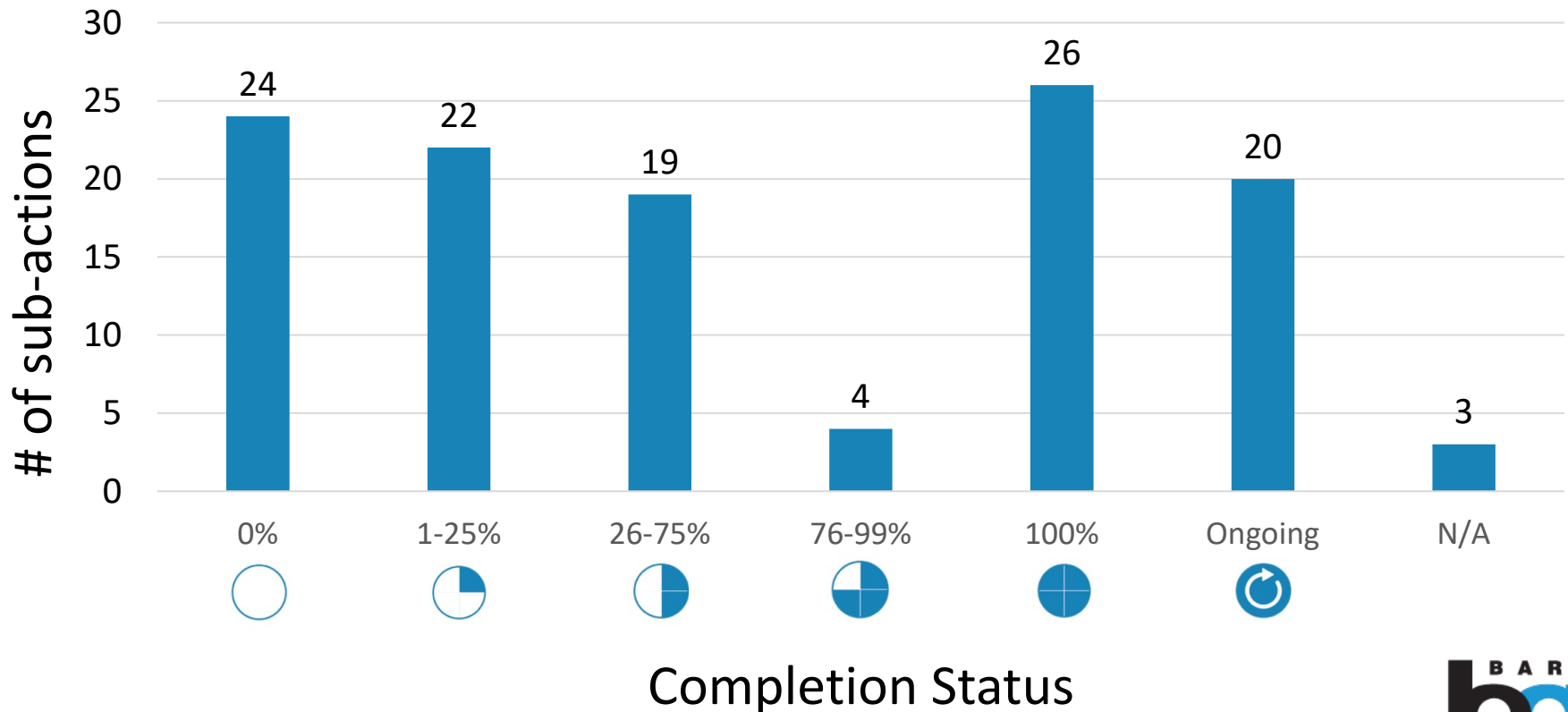
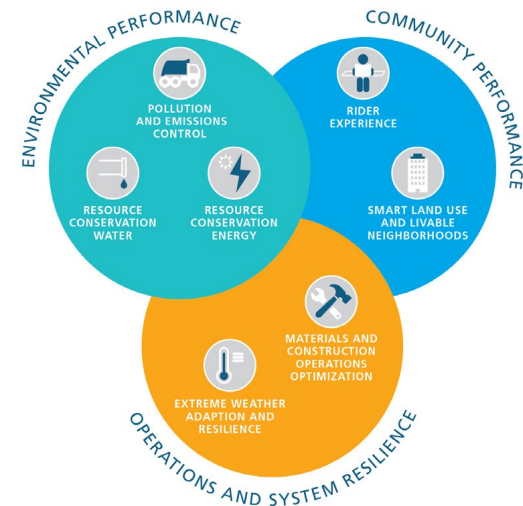
Performance Metrics and Targets

From 2020 Report

	Units	2015 Baseline	2016	2017	2018	2019	2020	Target 2025
 EMISSION AND POLLUTION CONTROL								
Total solid waste and landfill diversion rate		BART's Sustainability Team is developing a Master Waste Management Plan to address and improve landfill, recycling and composting across BART's facilities. As part of this Master Waste Management Plan, BART will collect data in order to establish a baseline and set realistic targets.						
 MATERIALS AND CONSTRUCTION OPERATIONS OPTIMIZATION								
Percentage of BART Project Delivery Staff trained in BART Facilities Standards (BFS) Sustainability Controls	%	Training will commence in 2022.						100%
 EXTREME WEATHER ADAPTATION AND RESILIENCE								
Percentage of High Priority Actions in the BART Local Hazard Mitigation Plan (LHMP) Actions underway or complete	%	Will be measured in 2022 when LHMP is updated.						100%

Sustainability Action Plan – Action Statuses

Sustainability Action Plan contains 118 sub-
actions to be completed by 2025



Upcoming Sustainability Group Priorities in 2021 & 2022

Energy Use & Greenhouse Gas (GHG) Emissions

- Bring two new renewable power purchase agreements (PPAs) online in 2021
- Engage Board on electric vehicle (EV) charging policy; initiate implementation plan for EV charging
- Continue retrofitting parking garages with LED lighting
- Complete station LED lighting study; develop implementation plan
- Develop pilot for electrification of non-revenue vehicle fleet (pending funding)
- Explore reducing/eliminating GHG emissions from eBART

Water

- Collect data to inform our water reduction strategies in shops & yards
- Streamline data processing to assist management of irrigation practices

Emission and Pollution Control

- Engage employees on sustainability features at BART Headquarters (BHQ) and sustainability controls in BFS
- Conduct pilot at BHQ to estimate dumpster fill rate for waste calculations

Materials & Construction Operations Optimization

- Provide support to finalize LEED Gold certification for BHQ

Opportunities

- Funding opportunities
 - CalSTA's Climate Action Plan for Transportation Infrastructure (CAPTI)¹
 - Federal infrastructure package (INVEST Act ², bipartisan infrastructure deal³) and executive order calling for 50% of new car sales to be zero-emission vehicles by 2030⁴
 - State funding for resiliency projects⁵
- Communication to internal and external audiences
 - Greater awareness/urgency of climate change
 - Collaboration with partners on the Silicon Valley BART Extension, electric vehicle (EV) charging for buses, and others
- Technology enhancements
 - New water-efficient fixtures used for station modernization, new buildings
 - EV technology improvements make EVs viable for BART operations

¹ [Climate Action Plan for Transportation Infrastructure \(CAPTI\) | California State Transit Authority \(CalSTA\)](#)

² [2021 INVEST in America Act Fact Sheet | The House Committee on Transportation & Infrastructure](#)

³ [FACT SHEET: Historic Bipartisan Infrastructure Deal | The White House](#)

⁴ [FACT SHEET: President Biden Announces Steps to Drive American Leadership Forward on Clean Cars and Trucks | The White House](#)

⁵ [2021-22 State Budget | California Senate](#)

Appendix

Priority Actions

From Sustainability Action Plan, Accepted 2017

ENVIRONMENTAL PERFORMANCE PRIORITY ACTIONS

Resource Conservation – Energy and Greenhouse Gas Emissions

RCE 1	Increase Capacity to Support Regional Greenhouse Gas Goals
RCE 2	Adopt a Strategic Energy Plan
RCE 3	Make Renewable Energy Purchases
RCE 4	Invest in On-site Energy Generation
RCE 7	Invest in District Lighting Retrofits
RCE 8	Onboard new Energy Efficient Train Cars

Resource Conservation – Water

RCW 1	Regularly Audit Water Use and Correct Issues
RCW 3	Upgrade Water Fixtures

Emissions and Pollution Control

EP 1	Support Solid Waste Reduction
EP 4	Improve Recycling at All District Shops and Yards
EP 9	Clean and Reuse Water

OPERATIONS & SYSTEM RESILIENCE PRIORITY ACTIONS

Materials and Construction Operations Optimization

MC 2	Update the BART Facilities Standards (BFS) for Construction Activities
MC 6	Develop Sustainability Design Guidance

Extreme Weather Adaptation and Resilience

EWA 1	Coordinate with Regional Agencies in Climate Adaptation Planning and Implementation
EWA 2	Conduct Hazard Mitigation Planning

Smart Land Use and Livable Neighborhoods

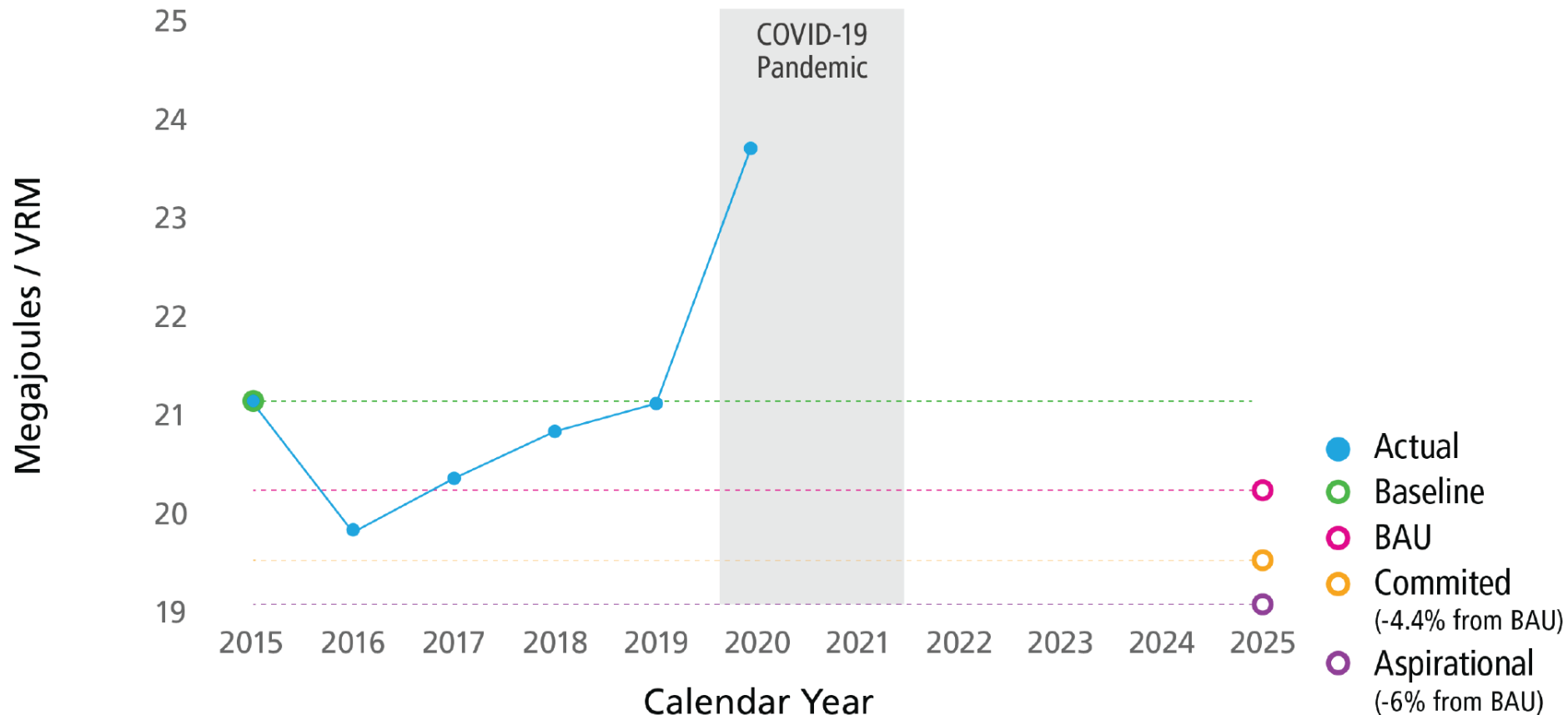
SLU 1	Improve Station Character and Community Fit
SLU 2	Continue to Lead the Region in Transit-Oriented Development
SLU 3	Connect to Community – Station Access

Rider Experience

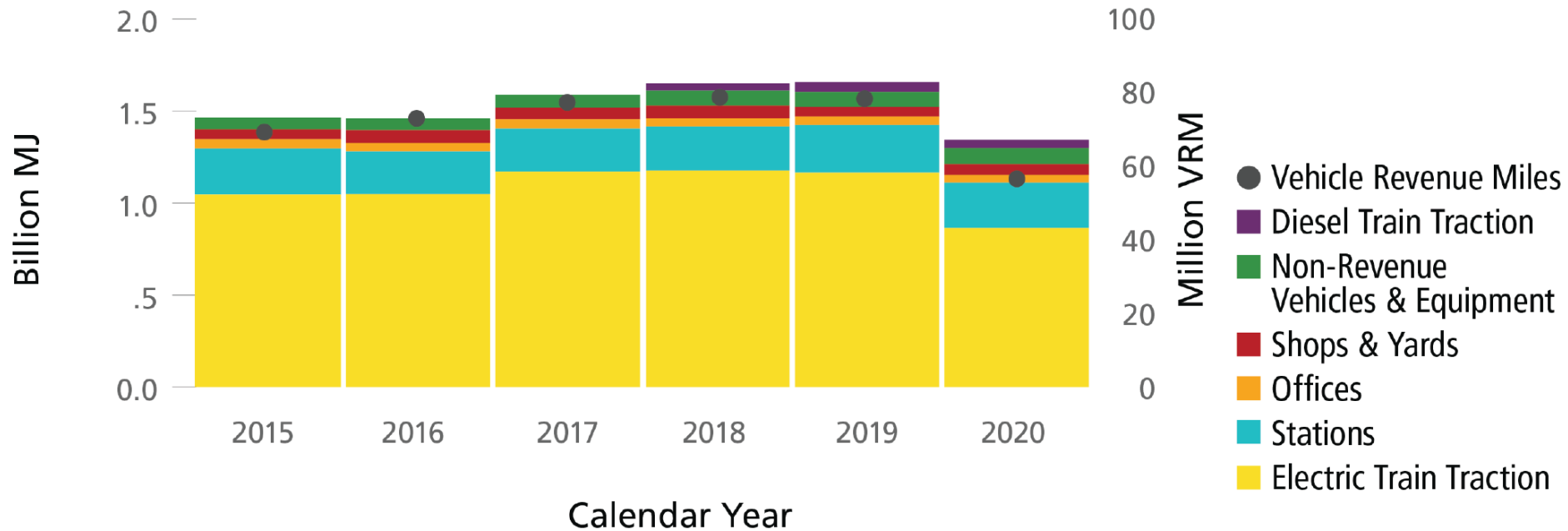
RE 1	Create Cleaner Station Environments
RE 2	Create Safer Station Environments

COMMUNITY EXPERIENCE PRIORITY ACTIONS

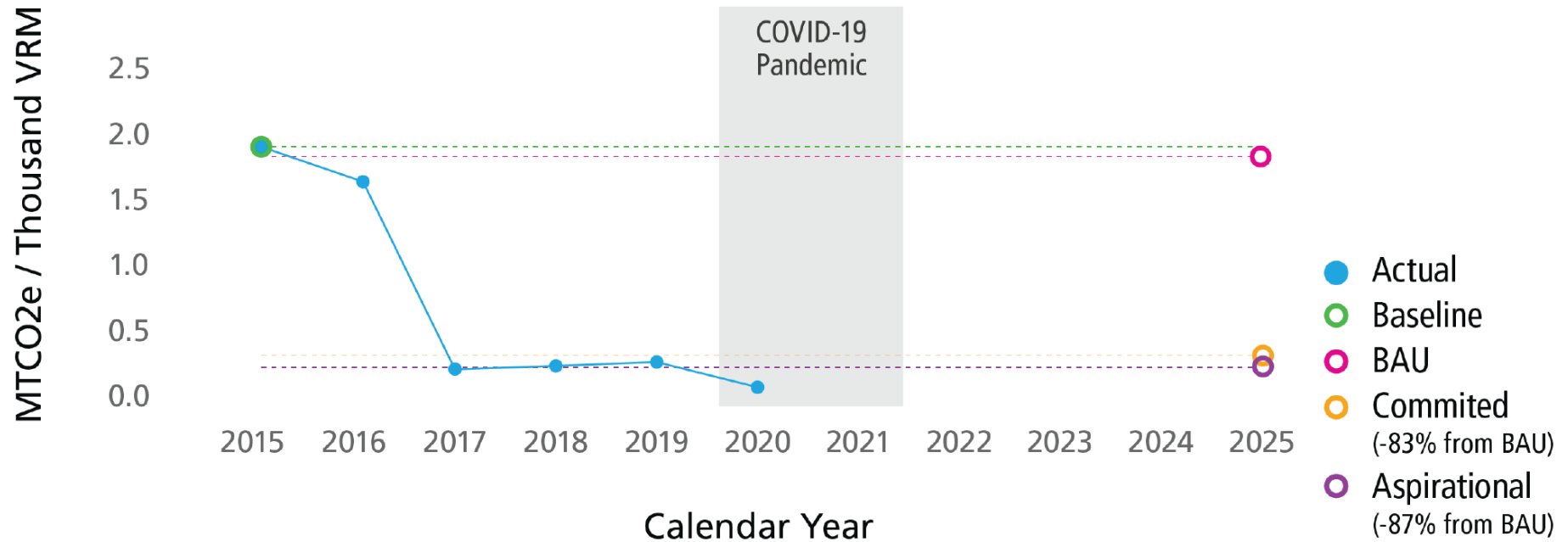
Energy Use per Vehicle Revenue Mile (VRM)



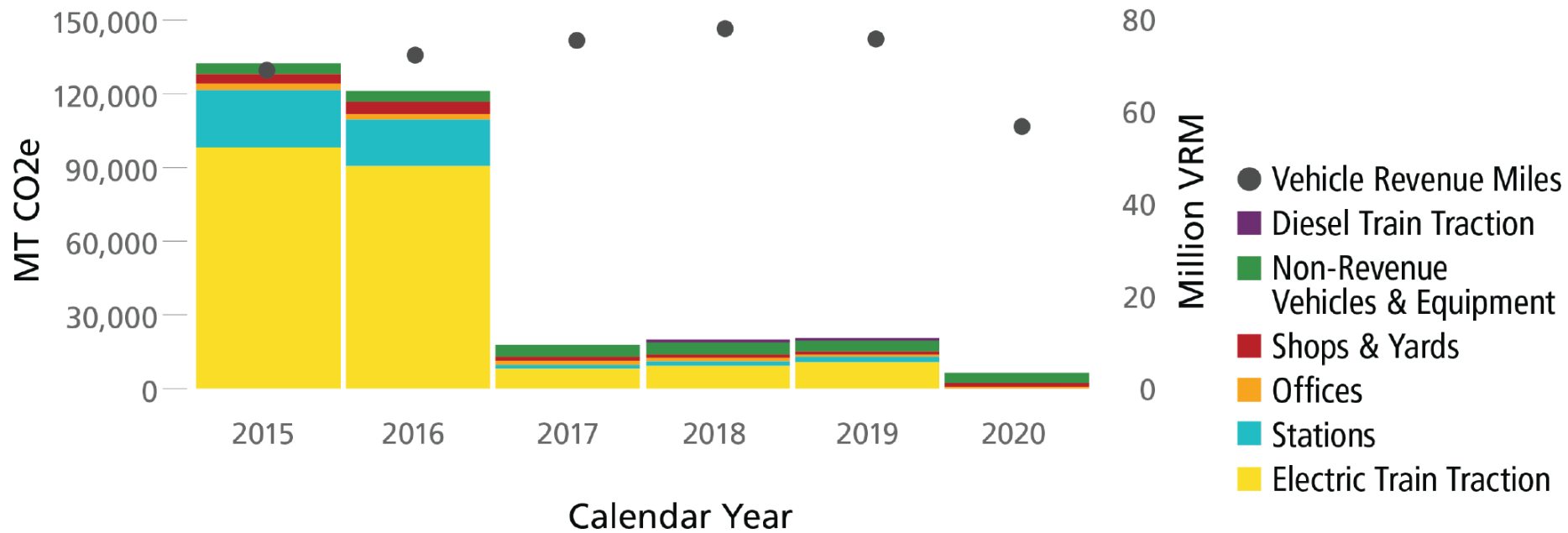
Energy Use by Category



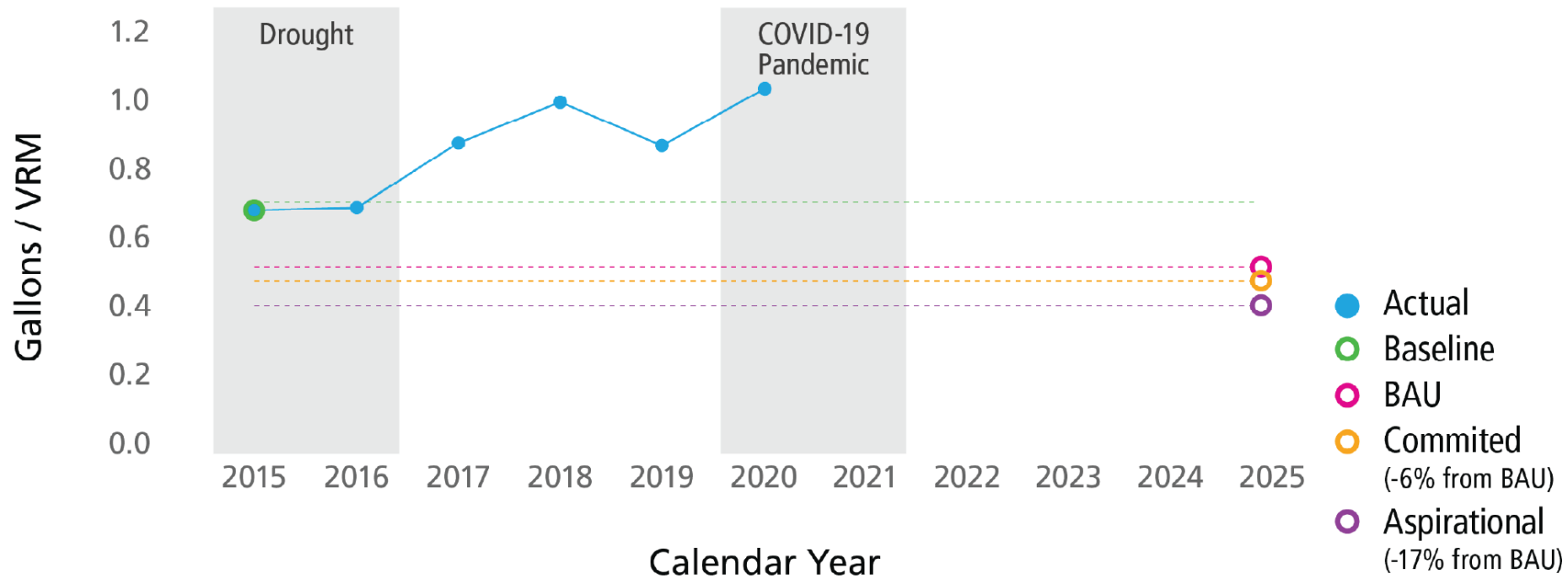
GHG Emissions per Vehicle Revenue Mile (VRM)



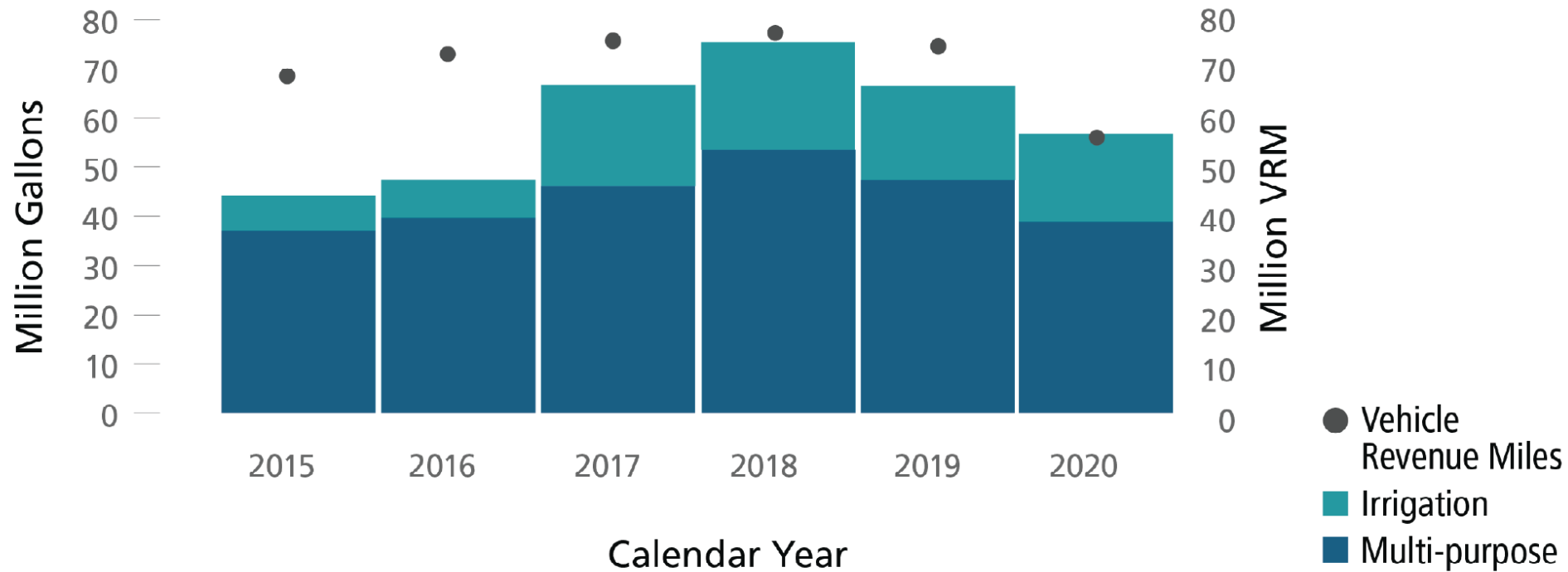
GHG Emissions by Category



Water Use per Vehicle Revenue Mile (VRM)



Water Use by Type



Master Waste Management Plan - Data

Total District Waste = Weight of Recycling, Compost, and Landfill

Landfill Diversion Rate =
$$\frac{\text{Weight of Recycling} + \text{Compost}}{\text{Total District Waste}} \times 100\%$$

Weight est. = Dumpster volume x annual pickups x fill rate x material density

Fill rate est. = estimated based on audits and/or technology

Next Steps

Audits to confirm waste volumes and fill rate

Increase accuracy with BHQ data pilot

Master Waste Management Plan - Data

What: Determine a defensible fill rate.

How: calculate or observe fill rates that can be applied districtwide. This will be done by people or technology. To determine which to use, we will estimate costs of BART staff/consultant auditing dumpsters vs technology solution. Before doing so, we need to answer the following questions:

- How many stations needed to be audited? What is enough to be representative?
- How often should dumpsters be audited?