



COLUMBUS GREEN IT PLAYBOOK

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Acknowledgements and Disclaimer

On behalf of the Columbus Green IT community we would like to share our inaugural **Green IT Playbook**. The Green IT Playbook is co-authored by **Smart Columbus** and **Rackspace Technology**[®], in partnership with the Green IT Working Group.

Playbook Intent:

- Educate the technology community through a series of metrics that align with a broad view of environmental, social, and governance (ESG) policies.
- Establish a performance baseline for the Columbus Region through self-assessment by partner organizations against the previously mentioned metrics.
- Inspire and inform through success stories from local organizations that are accelerating Green IT practices.

The IT function plays a significant role in the global sustainability landscape. The IT sector consumed 7% of global electricity in 2020. This figure is expected to rise to 13% by 2030.¹

The Columbus Region technology community can make an impact by collaborating to improve the sustainability of our region, country, and globe.

Please join us in this important movement.

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¹ European Union Commission



THANK YOU

TO OUR WORKING GROUP MEMBERS

A special thanks to **SustainableIT.org**, whose global initiative inspired and informed this Playbook.





























ENEIGI, AI













"We don't inherit the Earth from our ancestors, we borrow it from our children." -Kerin Ord

Nomenclature:

The Playbook uses the term "Environmental, Social, and Governance (ESG)" to refer to a broad set of principles relating to an organization's climate and community impact. Some organizations have adopted different nomenclature based on stakeholder preference, industry, political considerations, and other factors. Common alternative terminology for "ESG" includes: Sustainability, Corporate Social Responsibility, and Corporate Sustainability.

DISCLAIMER:

The purpose of the Green IT Playbook is to educate and share examples of sustainable technology and IT best practices. The information, content, materials, data, and recommendations (collectively, "Information") contained in this document do not replace independent professional judgment. Neither Smart Columbus nor the authors assume any responsibility for the use of, or reliance on, the Information included by any reader or user. Smart Columbus recognizes that each organization's sustainable technology needs, capabilities, and policies are ultimately the decision of organizational stakeholders.





Introduction: Creating a Green IT Zone

A "<u>Blue Zone</u>" is a geographic area where an uncommonly high percentage of the population lives to the age of 100+. Five Blue Zones have been identified around the world, all sharing a set of evidence-based denominators that define the area's culture, diet, and lifestyle.

The Columbus Region is creating the world's first "**Green IT Zone,**" an area defined by a broad coalition of organizations committing to a shared vision of sustainability in their technology and IT operations.

In 2021, technology sector operations generated an estimated 5% of global CO2 emissions. This figure is set to surge to as much as 14% by 2040.² With a growing number of tech-based organizations calling Central Ohio home, advances in Artificial Intelligence, and increased use of technology in workplaces and communities, we

will not be immune to the sustainability challenges that come with increased energy demand.

The Columbus Region's tech community is positioned to set the pace for change and establish the Region as a national leader in sustainable IT practices.

The Green IT Playbook outlines 11 best practices to start our journey towards becoming the world's first Green IT Zone.

Source: SustainableIT.org

² Forbes



ENVIRONMENT

Carbon-neutral, green IT infrastructure and operations
Circular technology lifecycle and e-waste elimination

Eco-efficiency
Transition to renewable energy
Sustainable tech sourcing

Sustainable tech sourcing

Sustainable IT's key goals

Sustainable IT's key goals

Sustainable IT's key goals

Socio-environment

Environmentally, socially, and economically responsible technology innovation

Socio-economic

Upskilling and, reskilling for Future of Work
Sustainable Al

Green IT Practices

Our 11 Green IT practices outline an initial pathway for organizations in the Columbus Region to integrate their technology departments into an organization-wide ESG approach. Each practice includes a simple, measurable metric, tips for implementation, and success stories from local organizations.

FOCUS AREA	METRIC	COLUMBUS DATA AGGREGATION	
	Scope 1 & 2 GhG Emissions	Varies by organization	
Greenhouse Gas Emissions	Formal methodology (regulatory protocol, standards, framework, etc.) adopted to track & report emissions.	52% Yes 48% No	
	System(s) implemented to collect emissions data.	58% Yes 42% No	
Cloud Performance	Portion of workload that is cloud-based.	Varies by organization • 48% of organizations are 50%+ cloud-based • 19% of organizations are 100% cloud-based	
	Portion of workload powered by renewable energy.	Varies by organization 19% of organizations use 25%+ renewable energy	
Devices & Procurement	Procurement policy for Energy Star certified hardware.	48% Yes 52% No	
	Circular lifecycle policy for all end-user devices.	86% Yes 14% No	
	Formal program to recruit and upskill diverse IT talent.	58% Yes 42% No	
Diversity, Equity & Inclusion	Diverse workforce demographics in IT/technologist roles.	Columbus Regional Averages 27.8% non-white 26.8% female	
	Programming to support digital equity & accessibility.	42% Yes 58% No	
Governance	Formal governance structures in place to address: Sustainability, Data Privacy & Security, and Business Continuity.	76% Yes 24% No	

Twenty-one organizations self-reported their performance against the Green IT metrics in early 2024 to create a baseline for the Columbus Region. Our goal is to track improvement in regional performance year over year as more organizations adopt these metrics and share best practices.



Focus Area: Greenhouse Gas Emissions

Reducing Greenhouse Gas (GHG) emissions is a crucial component of any ESG strategy that focuses on carbon neutrality. For organizations seeking to measure their climate impact and achieve ESG goals, tracking GHG emissions is a concrete way to identify the largest emissions producers in your operations and monitor improvement over time.

Technology and the IT function play an integral role in GHG Emissions measurement and reduction. Establishing and operating an organization-wide system to track emissions data will require strategic and tactical support from technologists.

Depending on size, industry, and location, some organizations may need to track GHG emissions to comply with regulatory standards.

Technology is often a significant energy consumer within an organization. This factor makes energy consumption, efficiency, and renewable energy key to reducing overall emissions when designing and operating IT environments.

Green IT Practices

1. Scope 1 & 2 Greenhouse Gas Emissions

The <u>GHG Protocol</u>, an internationally-recognized climate framework adopted by the United States EPA and other regulators, classifies GHG emissions in three "Scopes."

- **Scope 1:** Direct greenhouse (GHG) emissions that occur from sources controlled or owned by an organization (e.g. emissions from company-owned vehicles).
- **Scope 2:** Indirect GHG emissions associated with the purchase of electricity, steam, heat, or cooling.
- **Scope 3:** Indirect GHG emissions from upstream and downstream activities and supply chain (e.g. business travel, waste from operations, use of products sold). *Scope 3 emissions are the hardest to quantify and are often omitted in reporting.

Source: US EPA



Where Does Columbus Stand?

Emissions vary by organization based on size, industry, operating structure, and numerous other factors.

Resources

A **GHG Emissions Guide** to mature your reporting process can be found in the Resource Library.

2. Formal Methodology to Track Emissions

Has your organization adopted an official climate framework or standards to govern ESG practices?

There are several, widely recognized frameworks used by regulators, investors, and other stakeholders to measure an organization's ESG performance against common indicators.

Explore popular frameworks in Smart Columbus' **ESG Reporting Toolkit** in the Resource Library.

Certain frameworks may be more common in individual industries, or required by regulators.

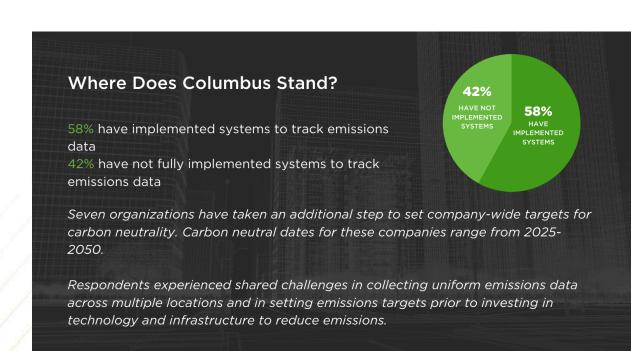




3. Systems Implemented to Collect Emissions Data

Implementing technology to record and report emissions information could leverage support from IT leaders and technologists in order to integrate automated data-tracking systems and amplify effective solutions.

With data collection tools in place, decision makers can assess science-based solutions to identify emissions reduction opportunities, benchmark against industry peers, reduce climate risks, and accurately report the organization's ESG performance to interested stakeholders such as consumers, investors, and regulators.



Success Story: GHG Emissions

<u>Huntington National Bank</u> and <u>Expedient</u> have each adopted formal methodologies to track and record Scope 1 & 2 emissions and have robust ESG reporting processes. Their sample reports demonstrate what is possible for Green IT organizations.

ENVIRONMENTAL PERFORMANCE SUMMARY

The following table shows Huntington's historical progress against our environmental goals through specific emissions, usage, and consumption measurements.

	2017 (baseline)	2018	2019	2020	2021	2022 TOTAL COMPANY	2022 LEGACY HUNTINGTON
Scope 1 - Direct Emissions (MT CO ₂ e) ^{1,2}	14,341	13,828	13,686	11,964	12,328	17,895	12,033
Scope 2 - Indirect Emissions (MT CO ₂ e) ^{1,2}	77,722	73,172	60,727	48,237	47,838	54,345	40,133
Building Energy Consumption (MWh) ¹	219,601	255,869	192,127	162,339	168,417	202,709	142,510
Renewable Energy (MWh) ³	n/a	n/a	n/a	1,331	1,197	1,220	1,220

Huntington 2022 TCFD Metric Report Format

Objective	Measurement	Result	Target	Target Description
Greenhouse Gas Emissions	tCO2e (metric tons)	Number	-%	Scope 2 electricity consumption* emission factor. Reduction with increased renewable sources.
Renewable Energy Utilization	Percentage	%	%	Holistic renewable energy consumption.
Energy Consumption	MWh	Number	n/a	Average power consumption across all facilities over a 90-day period.
Power Usage Effectiveness	Average PUE	Decimal	Decimal	Average of Facility Load (kW) / UPS Load (kW) over a 24-hour period.

Expedient 2023 proposed ESG Metric Report Format



Focus Area: Cloud Performance and Optimization

Utilizing virtual services (cloud, SaaS, etc.), where possible, can provide support to organizational efforts to lessen energy consumption.

When on-site servers are essential for operations, leveraging power from renewable energy sources can reduce GHG emissions and drive progress towards ESG targets.

Regardless of an organization's cloud utilization they should strive for continuous performance optimization as their workload needs evolve. Reducing on-site energy consumption and leveraging renewable energy ultimately lessens organizational emissions to improve ESG performance and compliance.

Green IT Practices

4. Portion of Organizational Workload that is Cloud-Based

Shifting workload to cloud based services reduces an organization's on-site energy demand and direct emissions for that portion of their operations.

To further promote Green IT practices organizations using cloud based resources should ensure that vendors share similar ESG principles in their energy consumption.

Resources

A **Template RFP** to evaluate the ESG performance of cloud-based vendors can be found in the <u>Resource Library</u>.

Where Does Columbus Stand?

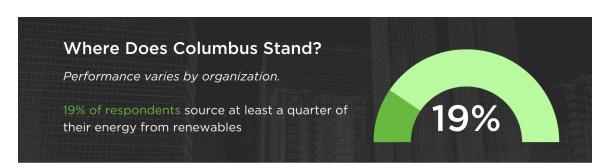
Performance varies by organization.

Nearly half of respondents (48%) manage 50% or more of their workload on the cloud.

19% of respondents have shifted their entire workload to the cloud.



5. Portion of Organizational Workload Powered by Renewable Energy



Even with a robust slate of cloud based services, most organizations will require additional energy. Procuring that energy from renewable sources represents a climate-friendly alternative.

Renewable energy can be secured from on-site sources (e.g. rooftop solar) or by working with utility providers to procure energy from renewable sources.

Success Story: Cloud Performance

T-CETRA, a leading financial technology provider based in Dublin, Ohio, has shifted 99% of their workload to the cloud.

They have strategically engaged

energy providers to ensure that their on-site energy consumption comes from renewable sources while simultaneously incorporating ESG principles into their selection of cloud-based vendors.

"Utilizing the cloud enables T-CETRA to streamline operations while minimizing its carbon footprint. It's our duty to safeguard the environment and combat climate change for future generations. We're fortunate to collaborate with cloud partners who share our deep commitment to sustainability." - Gus Hasham, Co-Founder & CIO, T-CETRA

One of T-CETRA's largest vendors sources their energy from renewables. This vendor's reliance on renewable energy, combined with T-CETRA's decision to base that portion of their operations on the cloud, reduced T-CETRA's GHG emissions by 34.2 MTCO2e from 2021- 2023.



Success Story: Infrastructure Optimization

Rackspace Technology, a global multi-cloud services provider, retired 400 bare metal servers in the first quarter of 2024, on the way to an organizational target of retiring 900 bare metal servers in 2024. Meeting this goal will eliminate 160 MTCO2e of GHG emissions. Additionally, 2,000 virtual servers will be optimized in 2024, further reducing emissions.

Rackspace Technology engages an intentional process to continuously optimize its resource usage. By employing utilization data for both its servers and applications, Rackspace was able to identify opportunities to reduce workload and consolidate workloads leading to the reduction and optimization of bare metal and virtual servers. This is possible by having refined observability practices which provide data for key decision making.





Focus Area: Devices & Procurement

The technology assets that organizations deploy internally represent a significant opportunity for engaging Green IT practices.

Only 17.4% of electronic waste is recycled globally, leading to heightened environmental and health issues, as well as missed cost-savings from potential refurbishment, resale, and redeployment of assets.

Inefficient electronic waste practices also lead to a global loss of \$57 billion annually through the disposal of key raw materials, such as iron, copper, and gold.³

Redirecting refurbished technology assets into the community to support residents who lack access to affordable, high-quality devices can offer a sustainable solution to device retirement while closing the digital divide. Device donation also offers an avenue for IT departments to support organizational community engagement goals and impact areas.

Green IT Practices

6. Procurement Policy for Energy Star Certified Hardware

<u>Energy Star</u> is a government-backed program administered by the U.S. Environmental Protection Agency to advance energy efficient technology. The program provides energy ratings for products and devices using standardized methods.

Prioritizing Energy Star certified hardware and vendors can reduce an organization's environmental impact. Energy Star hardware uses less energy and produces fewer GHG emissions than non-certified alternatives. Widespread adoption of Energy Star equipment can help transform the Columbus Region into a Green IT Zone by demonstrating a commitment to sustainable business assets.

³ World Health Organization



When purchasing IT hardware, consider energy efficiency standard such as:

- **Energy Demand:** Annual energy consumption of IT hardware must not exceed **[specific kWh threshold].**
- **Energy Reduction:** Require a detailed lifetime energy savings report from vendor products, demonstrating a minimum of **[percentage]**% energy reduction over non-Energy-Star certified equivalents.
- **Energy Efficiency Savings:** Establish a **[ROI threshold]** for the energy savings generated by Energy Star certified products compared to non-certified alternatives.



7. Circular Lifecycle Policy for all End-User Devices

Responsible recycling or upcycling of retired technology offers a significant opportunity to implement Green IT practices.

Begin by pinpointing your organization's current device life-cycle status and strategically benchmarking against industry peers to establish internal targets.

Determine your reusable life-cycle target using **Reusable Yield***, which measures the percentage of assets reused after retirement.



*The term Reusable Yield was coined by Bob Houghton, CEO Sage Sustainable Electronics



Once an internal target has been set, construct a company-wide strategy for devices nearing the end of their life-cycle using the 3 R's- Reduce, Reuse, Recycle.

Reduce

Adjust internal ITAM (IT Asset Management) standards to reduce the number of new devices needed annually.

- Can life-cycle forecasts be extended through advance purchase planning?
- Can virtual desktops be leveraged to supplement laptop & desktop needs?

Reuse

Explore alternatives to asset disposal or recycling.

- Reuse Internally: Refurbish and redeploy in a department or role with different technology needs.
- <u>Donate</u>: Explore policies to donate high-quality retired assets to community organizations or residents who lack access to affordable devices.
- <u>Resale</u>: Retain an ITAM vendor to refurbish and remarket devices or sell refurbished devices internally to employees.

Recycle

Recycle with an <u>R2 certified</u> e-waste vendor and request a Certificate of Destruction to confirm that assets have been transferred and securely destroyed.





Success Story: Devices & Procurement

Columbus based <u>Grange Insurance</u> is committed to corporate sustainability and has taken steps to go green with its technology. Grange has re-imagined its device lifecycle by leveraging retired IT equipment. Grange previously disposed of all its IT assets when the devices reached their predefined end of life and leveraged a third-party vendor to wipe sensitive data from these devices and prepare them for disposal.

In 2023, Grange revisited its device lifecycle policy and began to implement changes that benefit the business, the environment, and the community. Grange has extended the life of its assets by refurbishing reusable equipment and reusing it internally. In addition, Grange has begun to support the company's community impact goals through donations to non-profit organizations like SJCC Community Development Foundation, which focuses on urban and community economic development in underserved communities. Today, nearly 20% of Grange's retired IT assets are either donated or re-deployed internally.





Focus Area: Diversity, Equity, & Inclusion (DEI)

To become a fully inclusive Green IT Zone, organizations in the Columbus Region must leverage their IT function to include all residents in digital progress.

Green IT Practices

8. Formalize Programs to Recruit and Upskill Diverse IT Talent

Integrating DEI considerations into your recruitment and workforce development efforts will support the successful acquisition and promotion of talent from diverse and representative backgrounds.

The following best practices can assist Green IT organizations implement a robust employee development pipeline:

- 1. **Preparing to Hire -** Review organizational DEI policies with the hiring manager before drafting the position description.
 - Skills Based Hiring & Role Criteria- Rigid hiring criteria can be a
 barrier for diverse populations. Embrace the total skills market
 including candidates who are: self-taught, gained their skills in a
 different function or industry, come from different employment
 models.
- 2. **Talent Sourcing -** Leverage alternative talent pools to supplement traditional posting avenues:
 - Apprenticeship, Vocational, or Associate Degree programs
 - Tech bootcamps and community based-organization training programs
- 3. **Talent Screening -** Design a candidate review process that accounts for diverse perspectives.
 - **Interview Team -** Diversify the groups of people who review applications and interview candidates.
 - "Must Haves" Reflect critically on specific use-cases for the requested skills without bias toward the hiring manager's or previous employees backgrounds.
- 4. **Hire Selection -** A diverse panel of interviewers provides multiple perspectives on the candidate's qualifications and gives a candidate a more accurate picture of the organization.



5. **Upskilling -** Provide equitable opportunities for professional development and internal staff advancement.

The recommendations above are sourced from The Columbus Partnership's **<u>DEI</u> <u>Recruiting Toolkit</u>** authored by professionals from the <u>DEI Leaders Group</u>.



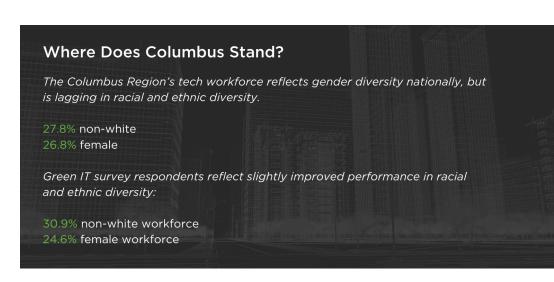
9. Diverse Workforce in IT/Technologist Roles

Supporting IT talent from diverse backgrounds ensures a wide range of perspectives, backgrounds, and skills are represented throughout your organization.

A 2022 report from the U.S. Department of Labor Statistics includes workforce diversity statistics for computer occupations nationally.⁴

National Averages

42.0% non-white 26.5% female



⁴ U.S Department of Labor Statistics



10. Programming to Support Digital Equity & Accessibility

Digital Equity & Accessibility is an essential community feature of a Green IT Zone needed to close the digital divide: the gap between those with affordable access to devices, reliable high-speed internet, and skills to navigate a technical world, and those without.

IN FRANKLIN COUNTY

- 80,000+ households (representing 200,000+ residents) do not have a home internet subscription
- 110,000+ households do not have access to a laptop, desktop, or similar device
 - 8.1% of households only have a smartphone

Franklin County Digital Equity Coalition

The Columbus Region's comprehensive plan to address the digital divide includes four factors:

- 1. **Connectivity:** Many residents, particularly in low-income neighborhoods, lack affordable, reliable high-speed internet.
- 2. **Device Access:** A significant number of households do not own adequate digital devices to engage in essential online activities.
- 3. **Digital Life Skills:** Access to the internet and devices is insufficient without the skills needed to effectively use them.
- 4. **Outreach & Adoption:** There's a need for a coordinated outreach approach to ensure that residents are informed and can effectively engage online.





Green IT organizations can support:

- 1. **Device Donation:** Donate a portion of your high-quality, retired devices to residents and/or community based organizations and support device refurbishment programs.
- 2. **Invest in Infrastructure:** Contribute to the build-out of high-speed internet in underserved areas.
- 3. **Training & Education Programs:** Leverage internal resources and talent to offer digital skills training and educational resources to under-resourced communities
- 4. **Advocacy & Policy Influence:** Advocate for public policy that supports digital equity, and implement internal policies to commit your organization to closing the digital divide.

Success Story: Diversity, Equity, & Inclusion (DEI)

Branch Insurance, an insurance technology startup based in Columbus, Ohio, has taken an innovative approach to talent acquisition and development which benefits the local community and the business's bottom line. Branch CTO, Joe Emison, recognized an under-utilized talent pool in junior developers. It began with the question, "What if we bought our systems and grew our people?" Instead of investing heavily in senior software engineers to build systems from scratch, Branch invests in their team and relies on existing code and products to construct their tech stack.

Branch recruits junior developers from underserved populations in Columbus, and operates a tech bootcamp in-house to teach developers the skills they need to be successful at Branch and beyond. Bootcamp participants receive a weekly stipend during training. Roughly half advance to a six-month internship, and half of those join the Branch team full time. The result is a circular hiring and upskilling process that has resulted in a majority minority software development team that costs much less to hire and retain than Branch's competitors.



Focus Area: Governance

The final essential component of a robust Green IT organization is a comprehensive governance policy that allows organizational leadership to consistently and comprehensively review business-practice through an ESG lens.

Critical governance elements to consider include:

Board Structure

- Adopt a skills matrix for critical Board competency around ESG topics.
- Measure Board diversity.

2. Risk Management

- Identify climate-related and broader ESG risks and opportunities.
- Classify risks and opportunities into time horizons (short, medium, long term).

3. Supplier Diversity

 Adopt responsible sourcing and procurement policies as well as an associated verification process for current vendors.

4. Security

- Confirm a uniform process to identify cyber risks and incidents.
- Define reporting mechanism(s) to notify impacted customers when an incident occurs.
- Adopt policies to safeguard client data both inside and outside data centers.

5. Ethics & Compliance

- Ensure employee adherence to business conduct and compliance policies.
- Enforce policies regarding corruption, tax payments, antitrust & competitive matters.



Green IT Practices

11. Formal Governance Structures in Place to Address: Sustainability, Data Privacy & Security, and Business Continuity

A <u>Sample Governance Policy</u> for Green IT oriented organizations can be found in the Resource Library.





Columbus Green IT Performance Snapshot

Organizations are encouraged to self-assess and report their performance. **Twenty-one** organizations reported their performance against the Green IT metrics in 2024 to create a baseline for the Columbus Region.

Intel
Expedient*
Huntington National
Bank *
American Honda Motor
(AHM)*
Bread Financial
OhioHealth
Greif, Inc*

Rackspace Technology*
Lower, LLC
Grange Insurance*
T-Cetra*
Encova
Veeva*
Hikma Pharmaceuticals*
The Wasserstrom

Company

City of Worthington
Goodwill Columbus*
Buckeye Innovation
School Employees
Retirement System of
Ohio
Columbus Zoo and
Aquarium*
Smart Columbus

*Working Group members

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Governance	Formal governance structures in place to address: Sustainability, Data Privacy & Security, and Business Continuity.	76% Yes 24% No



Join the Columbus Green IT Movement

We invite you to self-report your Green IT performance. All reported data will remain confidential and will only be shared in aggregate.

The Green IT Playbook will be updated annually to demonstrate our progress as a Region and highlight new focus areas as the IT and sustainability landscapes evolve.

Resource Library

- GHG Emissions Guide
- ESG Reporting Toolkit
- Template RFP for Cloud Vendors
- Sample Governance Policy for Green IT Organizations

