



# GETTING STARTED GUIDE

Using Arc in preK-12 Schools

**THE CENTER**  
FOR GREEN SCHOOLS



Updated January 2022

# ABOUT ARC

Arc Skoru Inc is a technology company that is affiliated with [Green Business Certification, Inc](#) and the [U.S. Green Building Council](#) (USGBC). USGBC has a vision that buildings and communities will regenerate and sustain the health and vitality of all life within a generation. Arc Skoru believes that performance is the future of green building and created the Arc platform to help create better buildings and places for people and the environment.

Arc offers many benefits, including assurance that your building is performing as designed, visible commitment to the importance of ongoing performance, communication to occupants about how their actions can contribute towards the building’s sustainability goals, and accessible goal-setting for building sustainability data.

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### K12 STUDENTS & ARC

Arc provides exciting opportunities for students to understand their school building’s impact on their community and the planet and to participate in improving the building’s performance. Check out the CONNECTING TO THE CLASSROOM section for ideas, including classroom lessons in the [Learning Lab](#) curriculum platform. In the free [Arc + Schools: Practical Tips](#) webinar, hear about the many outcomes that result—in data management, sustainability gains, and student learning experiences.

## BEFORE YOU BEGIN: PERSONAL ACCOUNT SET-UP & LOGIN

Go to [arcskoru.com](https://arcskoru.com) to begin. To access a project in the Arc platform, you will need a free [USGBC account](https://www.usgbc.org).

If you already have a USGBC.org account, simply input your login credentials at [arcskoru.com](https://arcskoru.com) to add projects or view a list of projects you may be assigned to already. Think you have an account but can't remember your password? Just go to "Log in" and click "Forgot password?".

To setup an account for the first time:

- Click on "Log in" and then "Create One" to be taken to the account creation page on USGBC.org. Enter the required information.
- Open your email inbox to find a message from USGBC asking you to verify the account. Open the email and confirm account set-up.
- Return to [arcskoru.com](https://arcskoru.com) and login using the newly created username and password.

Once you are signed into the Arc homepage, you can scroll down to find links to educational videos and walk-throughs, which will come in handy as you proceed.

## BUILDING REGISTRATION



**DON'T MISS:** Arc's *Tour the Arc Performance Platform* video is important viewing for all new Arc users. See minute 2:30 for details about how to set up your project.

Is your project LEED certified, is it a U.S. public school, or is it neither or both? There are a few ways to register your building in Arc.

Note: The person registering the school will be the Arc Administrator, and so the person should be someone responsible for managing the project in Arc. The person registering the school will also be responsible for signing the Terms and Conditions Agreement, which can be seen here ahead of signing: <https://arcskoru.com/legal>.

### LEED certified building

All LEED certified buildings are already loaded into Arc. If you are already a member of the project team in LEED Online, the project will show up in Arc when you are logged in and click on "Projects" at the top of the page. Ensure that the email you used in LEED Online is the same as the email you used to sign into Arc.

If you are trying to benchmark data for a LEED certified building but are not listed as a project team member in LEED Online, your email can be added as a project team member either within Arc or within LEED Online. The

LEED project administrator (typically, the architect or sustainability consultant on the original project team) will have this ability. If you have problems, email [contact@arcskoru.com](mailto:contact@arcskoru.com).

### U.S. public school (not LEED certified)

Arc has created a special method of project registration for U.S. public schools that simplifies the data entry process. The main steps for registering a single school project are outlined below. If registering many schools at once, write [contact@arcskoru.com](mailto:contact@arcskoru.com) for assistance.

- Click on “Projects” at the top of the page. On the left-hand navigation bar, click on “Schools.” You should see an option toward the top right of your screen that says, “Claim Your School.”
- Type in the name of your school and select the “Claim Now” button if the project is unclaimed. If the project is already claimed and you don’t know who has claimed it, please write [contact@arcskoru.com](mailto:contact@arcskoru.com).
- If you were able to claim your school, basic location information automatically populates in the project registration form. Correct and complete any remaining information and click “Add Project.”

### Other

If you will be benchmarking a school that is not LEED certified and is either non-public or non-U.S. based, register the project by following the basic steps outlined in the video linked above and listed below. If the project is already registered but you don’t have access, either write the Arc Administrator to be given access or write to [contact@arcskoru.com](mailto:contact@arcskoru.com) to find out who the Arc Administrator is.

- After logging into Arc, click on “Projects” at the top of the screen to get to your dashboard, and then click on “Projects” again at the top of the screen to get to your list of projects.
- Click “Add a Project” toward the top right, fill in the information, and click “Add Project.”

## PROJECT SETUP

Once you’ve created a project, you are taken to a specific page with all of the information you can manage for your project. On the left-hand side is a navigation bar that includes a “Manage” section. The Manage section in Arc is where you can update project information, add people to your team, track building certifications, handle billing, update settings, and more.

If your building is newly registered, the overview section on your project’s page will tell you which actions you need to take to get started. We suggest you start with “Building Settings” by clicking these words in the Overview section. You can also get to “Building Settings” by going to “Meters & Surveys” in the left-hand navigation bar.

### Details for filling out “Building Settings”

- Occupancy: Enter the number of people typically in the building on an active school day. This number should include any visitors to the building and any part-time staff.

- Gross floor Area: Enter the size of the building. Generally, the gross floor area is the sum of the floor areas of the spaces within the building, including basements, mezzanine and intermediate-floored tiers, and penthouses. A school or school district’s facilities office should have this information.
- Operating hours: Enter the weekly operating hours for the building. This number should reflect the average time the building is in operation during a typical school week and weekend.
- Emissions Factor: Unless you have information about the actual emissions from one of your building’s electricity sources, we suggest you choose the default option, which is a standard emissions factor for your region. This factor can be changed at any time.
- Operational Days: Enter the annual operating days for the building. This number should reflect all days when the building is occupied, even if it is not at full capacity.

## PROJECT TEAM SETUP

The Arc Administrator has the ability to add and edit team member privileges so that folks who are responsible for entering and viewing data have access. Follow these steps to manage your team.

- From the left-hand navigation bar, select “Manage,” then “Team.”
- Under “Invite team members,” enter the email of a new team member. Update access privileges for team members by clicking “Edit” next to their name, and then select a different level of authorization.
  - Team Manager has complete access to the project, including data entry and submitting for review, and can make changes to the project team.
  - Team Member has complete access to the project, including data entry and submitting for review, but cannot make changes to the project team.
  - Project Administrators only show up on projects that were previously LEED certified. The Project Administrator in Arc is the original Project Administrator for the LEED certification and has the same rights as the Arc admin.
  - “Read Only” team members can access the project to view data but cannot make any changes.

If you need to change the Project Administrator or Arc Administrator, contact Arc at [contact@arcskoru.com](mailto:contact@arcskoru.com).

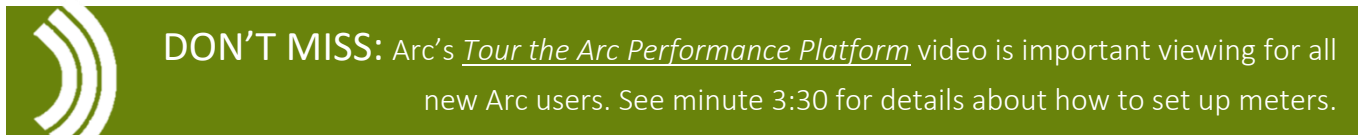
### ARC ESSENTIALS & ARC PERFORMANCE CERTIFICATES

If you’re looking for additional ways to plan, analyze, and communicate building and district performance, you might want to consider purchasing Arc Essentials and Arc Performance Certificates.

- **Arc Essentials:** For a monthly fee, a user with Arc Essentials can generate detailed reports and model future actions to increase their Arc score over time. [Learn more and explore pricing.](#)
- **Arc Performance Certificates:** For a monthly fee, validated certificates are generated for a project to communicate performance improvements or overall excellence. [Learn more and explore pricing.](#)

# DATA MANAGEMENT

## ENERGY



**DON'T MISS:** Arc's [Tour the Arc Performance Platform](#) video is important viewing for all new Arc users. See minute 3:30 for details about how to set up meters.

### ENERGY DATA OVERVIEW

To achieve an accurate Arc score, be sure to:

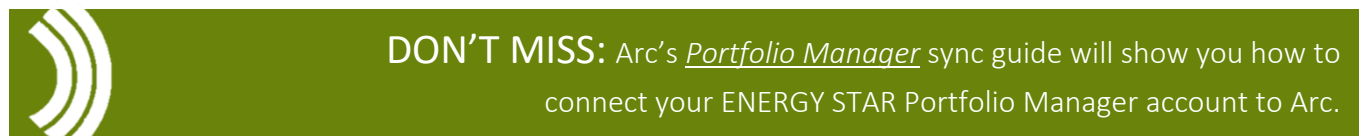
- Provide 12 consecutive months of total energy use for the whole project
- Include all energy sources (electric, gas, steam, etc.)

There are several ways to enter energy data for your project:

- Share ENERGY STAR Portfolio Manager® account
- Enter data directly into Arc through an Excel template or by entering data manually
- Automate smart meters

### OPTIONS FOR ENTERING YOUR ENERGY DATA

**\*PREFERRED\*** Option: Share Your Portfolio Manager Account



**DON'T MISS:** Arc's [Portfolio Manager sync](#) guide will show you how to connect your ENERGY STAR Portfolio Manager account to Arc.

You will start in your ENERGY STAR Portfolio Manager account and grant Arc access to your data. To make the connection, you will need the Project ID from Arc to input into Portfolio Manager, as instructed in the guide. You can find this ID in your Arc project page, under “Manage” and then “Project.” No further action is needed once you’ve set up the connection between Portfolio Manager and Arc. Once the link is accepted by Arc, it will take 24-48 hours for data to populate in Arc.

## Enter data directly into Arc

If you are entering data directly into Arc (instead of through Portfolio Manager), you will need to add each energy meter from your building and then enter the data. Under “Meters & Surveys,” you will see “Add a Meter.” Click this button to add your first meter. After the first meter is added, click the gear icon next to “Meters & Surveys” to add additional meters.

### *Upload Excel Template*

Follow these steps to upload a data spreadsheet:

- Under “Meters & Surveys,” click “Add a Meter” under Energy. You will see an option to upload a spreadsheet.
- Click on “Upload a spreadsheet” and then click to download the template.
- Enter energy data in the template, and save the file. Then, return to Arc and click the button to upload the file.

### *Enter Data Manually*

Follow these steps to make single data entries into Arc:

- Under “Meters & Surveys,” click “Add a Meter” under Energy and fill in the required information. On the Data tab within this meter, click the “Add Row” button.
- A row will be added below to enter the data reading start and end dates and the reading. For a monthly utility bill, the start and end dates would be the start and end of the billing period, and the reading would be the energy used during that period. When complete, click “Update.”

## Connect to Smart Meters

Establish a connection between your existing building monitoring assets and Arc. To discuss feasibility, contact the Arc team at [contact@arcskoru.com](mailto:contact@arcskoru.com).

Portfolio upload: If you are seeking to upload energy data for a portfolio of projects, contact us at [contact@arcskoru.com](mailto:contact@arcskoru.com).

## HOW IS THE ENERGY SCORE CALCULATED?

The total energy use from the most recent 365 days is converted into equivalent carbon emissions (based on local emissions factors) and is equally weighted between carbon and source energy. The lower the overall carbon emissions and source energy, the better the score. A perfect score reflects net zero emissions. You can view the energy score on a scale of 0 – 100 or weighted to a score of 0 – 33.

# WATER



**DON'T MISS:** Arc's [Tour the Arc Performance Platform](#) video is important viewing for all new Arc users. See minute 3:30 for details about how to set up meters.

## WATER DATA OVERVIEW

To achieve an accurate Arc score, be sure to:

- Provide 12 consecutive months of total water use for the whole project
- Include all water sources (potable and non-potable)

There are several ways to enter energy data for your project:

- Share ENERGY STAR Portfolio Manager® account
- Enter data directly into Arc through an Excel template or by entering data manually
- Automate smart meters

## OPTIONS FOR ENTERING YOUR WATER DATA

**\*PREFERRED\*** Option: Share Your Portfolio Manager Account



**DON'T MISS:** Arc's [Portfolio Manager sync](#) guide will show you how to connect your ENERGY STAR Portfolio Manager account to Arc.

You will start in your ENERGY STAR Portfolio Manager account and grant Arc access to your data. To make the connection, you will need the Project ID from Arc to input into Portfolio Manager, as instructed in the guide. You can find this ID in your Arc project page, under "Manage" and then "Project." No further action is needed once you've set up the connection between Portfolio Manager and Arc. Once the link is accepted by Arc, it will take 24-48 hours for data to populate in Arc.



## Enter data directly into Arc

If you are entering data directly into Arc (instead of through Portfolio Manager), you will need to add each water meter from your building and then enter the data. Under “Meters & Surveys,” you will see “Add a Meter.” Click this button to add your first meter. After the first meter is added, click the gear icon next to “Meters & Surveys” to add additional meters.

### *Upload Excel Template*

Follow these steps to upload a data spreadsheet:

- Under “Meters & Surveys,” click “Add a Meter” under Water. You will see an option to upload a spreadsheet.
- Click on “Upload a spreadsheet” and then click to download the template.
- Enter water data in the template, and save the file. Then, return to Arc and click the button to upload the file.

### *Enter Data Manually*

Follow these steps to make single data entries into Arc:

- Under “Meters & Surveys,” click “Add a Meter” under Water and fill in the required information. On the Data tab within this meter, click the “Add Row” button.
- A row will be added below to enter the data reading start and end dates and the reading. For a monthly utility bill, the start and end dates would be the start and end of the billing period, and the reading would be the water used during that period. When complete, click “Update.”

## Connect to Smart Meters

Establish a connection between your existing building monitoring assets and Arc. To discuss feasibility, contact the Arc team at [contact@arcskoru.com](mailto:contact@arcskoru.com).

Portfolio upload: If you are seeking to upload water data for a portfolio of projects, contact us at [contact@arcskoru.com](mailto:contact@arcskoru.com).

## HOW IS THE WATER SCORE CALCULATED?

The total water use from the most recent 365 days is reflected in the score. The lower the overall water consumption, the better the score, with a perfect score reflecting net zero potable water use. You can view the scores on a scale of 0 – 100 or weighted to a score of 0 – 15.

# WASTE



**DON'T MISS:** Arc's *Tour the Arc Performance Platform* video is important viewing for all new Arc users. See minute 3:30 for details about how to set up meters and minute 4:28 for a quick overview of waste data.

## WASTE DATA OVERVIEW

To achieve an accurate Arc score, be sure to:

- Conduct at least one waste analysis within a 12-month period.
- Provide the quantities in WEIGHT (lbs, kg, or tons) of total waste generated (trash + recycling + compost) and then also the waste diverted from landfills and incineration facilities (recycling and/or compost).

The preferred option is to get actual weight data from your waste hauler. If you do not have waste metrics in weight, weigh the material yourself by conducting a “weigh in” or waste audit. If you have data from a waste management provider that you’re not sure is in the right metrics or format, email [contact@arcskoru.com](mailto:contact@arcskoru.com) to discuss whether that data is appropriate.

What to count:

The Waste score in Arc accounts for typical materials used in a building’s operation. The following five categories of products should be included in the waste data, whether they are sent to landfill or safely disposed of through reuse, recycling & composting programs.

- Paper, toner cartridges, glass, plastics, cardboard and old corrugated cardboard, food waste, and metals
- Lamps (indoor and outdoor, hard-wired and portable fixtures) and all mercury-containing lamps
- Food (compost)
- Office equipment, appliances, and audiovisual equipment
- Electric powered equipment

Note: If your school or district does not have good data on all of these items, then just report on what you do have and be consistent across your portfolio.

Do not include construction-related waste from any building renovations in your data for Arc.

## SCHOOL-SPECIFIC TIPS AND RESOURCES

While the data for Arc is comprehensive, schools may find it valuable to measure material streams separately to get a better sense of what is going on in the school (ex: cafeteria food audit).

These organizations provide different approaches for auditing and measuring resource streams in a school:

- [Waste Audit in 5 Easy Steps](#), from Clean River: Simple audit plan for visual inspection and weight measurements
- [How to Run a Waste Audit](#), from Oakland Unified School District
- [Guide to Conducting Food Waste Audits](#), from the U.S. Department of Agriculture
- [Food Waste Warriors Toolkit](#), from World Wildlife Fund: Resource organized by grade level with classroom audit guidance
- [TRUE Zero Waste Home Audit](#), from Green Business Certification, Inc. (GBCI)
- [TRUE Zero Waste Assessment Activity](#), from Green Business Certification, Inc. (GBCI)

Expert tips for setting up a successful audit at school:

1. **Be flexible:** Each school/site is different so don't be shy about adjusting audit guidelines to meet your needs.
2. **Multiple Measures:** Arc requires weight of material, but it can also be valuable to measure volume of each bag/bin especially if your collection is by volume and want to make the case for how much money can be saved by lowering collection frequency.
3. **Label Everything:** Provide pre-made labels and clear instructions for custodial staff about how to label, collect, and store bags for the audit.
4. **Not Every Lunch is Equal:** Plan around the menu and the school schedule so that the audit is conducted on a "typical" day (not the most or least popular menu options) and make sure there are no field trips or big changes in attendance that will impact the data. Repeat an audit 2x in one week or over multiple weeks to capture changes in menu popularity and materials generated throughout the school.
5. **Save the Messiest for Last:** If bags will be opened and materials sorted, save the cafeteria bags for last. And if possible, choose a day when the meals served are not super messy (aka avoid sloppy joe day). Trash from bathrooms should NEVER be included in sorting audit.
6. **Safety First:** Prepare with appropriate materials (gloves, tarps, aprons, etc) and develop a short training for all involved so everyone understands how to make it a safe event.
7. **Talk it Up:** Assign someone to make announcements about the audit, take photos, and write up a summary for the newsletter. During an audit recap presentation include the school custodian to share additional perspective and possible solutions.

## OPTIONS FOR ENTERING YOUR WASTE DATA

### Enter data directly into Arc

There is only one “meter” in the Waste category, but you can enter as many readings as you wish. An ENERGY STAR Portfolio Manager option does not yet exist for waste data.

#### *Upload Excel Template*

Follow these steps to upload a data spreadsheet:

- Under “Meters & Surveys,” click “Waste Data” under Waste. You will see an option to upload a spreadsheet.
- Click on “Upload a spreadsheet” and then click to download the template.
- Enter waste data into the template and save the file. Then, return to Arc and click the button to upload the file.

#### *Enter Data Manually*

Follow these steps to make single data entries into Arc:

- Under “Meters & Surveys,” click “Waste Data” under Waste and fill in the required information. On the Data tab, click the “Add Row” button.
- A row will be added below to enter the data reading start and end dates and the reading. When complete, click “Update.”

Portfolio Upload: If you are seeking to upload waste data for a portfolio of projects at one time, please contact Arc at [contact@arcskoru.com](mailto:contact@arcskoru.com).

### HOW IS THE WASTE SCORE CALCULATED?

The lower the weight of the waste generated and the higher the diversion rate, the better the waste score. The waste generated and diverted is converted into daily quantities per person to generate a score, and the weighted waste score is from 0-8. Note that weight of waste generated is weighted more heavily in the score to align with the waste hierarchy “reduction first.”

# *SURVEY: TRANSPORTATION & HUMAN EXPERIENCE*



**DON'T MISS:** Arc's [\*Tour the Arc Performance Platform\*](#) video is important viewing for all new Arc users. See minute 4:40 for information about surveys.

## OVERVIEW OF ARC SURVEY

Although the data is used for two different scores within Arc (Transportation and Human Experience), there is just one survey for both transportation and occupant satisfaction.

- **Transportation:** These questions capture the distance and mode(s) of transportation for a building occupant's typical commute.
- **Occupant Satisfaction:** These questions ask building occupants to rate their satisfaction with their environment on a sliding 10-point scale: extremely unsatisfied to extremely satisfied. There is an option to enter more detailed information about the building conditions and list the specific building space that the occupant is commenting on.

To achieve an accurate Arc score:

- Administer at least one transportation and one human experience survey, found within Arc, annually.
- Remember that the survey must be completed by a minimum number of building occupants to generate a score. The number of minimum responses is based on your occupancy. The instructions below to "Access the Survey" will take you to the page where the minimum is listed.

Both surveys are anonymous, but respondents have the option to include their name. At the time of this writing, the survey is available in 10 different languages. You can set the default language, and each participant can change the language to their preference.

## ACCESS THE SURVEY

Follow these steps to find the survey and get started:

- Under "Meters & Surveys," click on "Transportation Survey" or "Occupant Satisfaction Survey." Either section will get you access to the same survey options.
- On the right side of the screen, you will see a button for "Survey Tools & Resources." This button will show you a few options for administering the survey: emailing occupants directly, copying a survey link to send yourself, or administering a "lobby survey." You also have the option to export results.

## ADMINISTER THE SURVEY

### Email the survey to students and staff

In the email, set a timeframe and date by which the surveys should be completed, and identify a point in time during the day to help students/staff complete the survey, ex: homeroom, study hall or a teacher PD event. Feel free to use the sample email text provided below.

### Collect surveys over time in the lobby of the school

Place a sign next to the computer and send out a message to the community that the survey is live and collecting responses. The lobby survey is a good option in elementary schools where parents are more likely to be able to complete the survey for their younger student.

#### About Arc's "lobby survey" function

To share the survey on a public computer or to have many people complete the survey on one or a couple of tablets or computers, follow these steps:

- Select the "lobby survey" option within the list that appears when you click the "Survey Tools & Resources" button.
- Then, click on "copy link" within the same list and click on your language to copy the link to your computer's clipboard.
- Drop the copied link in a website browser on the lobby computer. The link will allow one person to take the survey, and the next person can click to take the survey again. Consider hanging a sign or including instructions for filling out the survey.

### Collect surveys during the morning drop-off

Have student volunteers collect responses from staff, students or parents as they enter the building. Have several tablets available with the "lobby survey" pre-loaded and intercept folks in the places where they may be arriving, ex: the parking lot, bus line or bike/walk access points.

### Send home a paper survey with students to be completed by parents or families

The paper survey is a good option in elementary schools where parents/families are more likely to complete the survey for their younger student. Once you collect the paper responses you will need to record them in an Arc survey template for upload. Contact Arc to access this template – [contact@arcskoru.com](mailto:contact@arcskoru.com).

## SAMPLE: SURVEY EMAIL TEXT

Hello,

*[Our School]* is striving to be more sustainable, and it is important to regularly assess and benchmark our progress. We are using a new software platform called Arc ([arcskoru.com](http://arcskoru.com)) to document our sustainability efforts and record energy, water, waste, occupant transportation, and air quality of our building so that we can improve over time.

You can help *[Our School]* by completing an important two-part survey. The first section of the survey is about how you get to school, and the second section asks your opinion about how the school's environment makes you feel. Staff, students and regular volunteers at our school can take this survey, and we need at least *[fill in your percentage from Arc]* of our community to complete it in order to generate a score. All data is anonymous unless you opt to include your name in the survey.

### **Transportation: "One day, one way"**

In this section of the survey, we want to know how regular building occupants like *[you/your child]* get to *[Our School]* on any given day. Choose a typical day and record the distance travelled to school and by what method (car, bus, subway, etc.). Use this *[link to an online mapping tool of choice]* to measure the distance of the trip. If the commute varies day-to-day, you can opt to add additional routes. Remember, just record one day at a time, and just the distance of a one-way trip to the building.

### **Occupant Satisfaction:**

In this section of the survey, the questions ask you to rate how satisfied *[you are/your child is]* with the environment of the building. Questions include things like temperature, smell, noise, or cleanliness. Please rate the building based on overall or average satisfaction. If *[you are/your child is]* dissatisfied, you have the option to indicate why and where in the building the issue is occurring.

It should only take a few minutes to complete the surveys here: *[INCLUDE SURVEY LINK FROM ARC]*  
Thank you for participating!

# TRANSPORTATION SURVEY



Language: English ▼

1. On a typical day, how do you get to and from this building? Enter results for "one day, one way" ?

Route 1

Select Travel Method ▼

+ Add Another Route

**Route 1** ×

Include any miles you travel to get to this building.

Travel Method	Distance In: Mile <span>▼</span>
Walk	<input type="text"/>
Bike	<input type="text"/>
Telecommute	<input type="text"/>
Bus	<input type="text"/>
Light rail (trolley, tram, streetcar)	<input type="text"/>
Rapid transit (subway, metro)	<input type="text"/>
Motorcycle or scooter	<input type="text"/>
Car solo	<input type="text"/>
Carpool 2-3 people	<input type="text"/>
Car: Alternate fuel	<input type="text"/>



# OCCUPANT SATISFACTION SURVEY

2. Use the slider to indicate how satisfied you are with the environment in this building?

Satisfied

Extremely Unsatisfied ————— Extremely Satisfied

3. We're glad to hear that. Please select the options below that significantly enhance your satisfaction:

- Thermal Comfort
- Sound
- Air Quality
- Cleanliness
- Light
- Privacy
- Views to Outdoors
- Daylight

Comments (Optional)

Location - eg. Lobby

Name (Optional)

Submit

2. Use the slider to indicate how satisfied you are with the environment in this building?

Unsatisfied

Extremely Unsatisfied ————— Extremely Satisfied

3. We're sorry to hear that. Please select the options below that significantly reduce your satisfaction:

- Dirty
- Cold
- Drafty
- Smelly
- Dark
- Bright
- Stuffy
- Glare
- Views to Outdoors
- Acoustics
- Privacy
- Sound
- Hot
- Humid

Comments (Optional)

Location - eg. Lobby

Name (Optional)

Submit

## HOW IS THE TRANSPORTATION SCORE CALCULATED?

Commuting distances and modes of travel provided through survey responses are converted to carbon emissions. The lower the emissions the better the score. You can view the scores on a scale of 1- 100 or weighted to a score of 0 - 14.

## HOW IS THE HUMAN EXPERIENCE SCORE CALCULATED?

The Human Experience score is tracked in Arc based on three key metrics, Occupant satisfaction survey responses, interior carbon dioxide (CO2) levels, and interior total volatile organic compound levels (TVOC), which when combined make up the category score. The breakdown is as follows: surveys are 50% of total weighting; CO2 & TVOC each 25% of total weighting. Enhanced comfort and environmental quality result in higher scores on a scale of 0 – 20.

# HUMAN EXPERIENCE: AIR QUALITY



**DON'T MISS:** Arc's [Tour the Arc Performance Platform](#) video is important viewing for all new Arc users. See minute 5:50 for information about air quality measurements.

## AIR QUALITY DATA OVERVIEW

The Human Experience score is based on three key metrics: occupant satisfaction (survey), carbon dioxide (measured), total volatile organic compounds (measured).

To achieve an accurate Arc score for carbon dioxide (CO<sub>2</sub>) and total volatile organic compounds (TVOC):

- Conduct at least one Indoor Air Quality (IAQ) evaluation for TVOC and interior CO<sub>2</sub> levels within a 12-month period.
- Either use a Photo-ionization detector and follow the protocol outlined by the video (and below) or use testing protocols consistent with one of the following methods: EPA TO-1, EPA TO-15, EPA TO-17, EPA Compendium Method IP-1, and/or ISO 16000-6, or other approved method.
- Provide TVOC data in micrograms per cubic meter (µg/m<sup>3</sup>) and CO<sub>2</sub> data in parts per million (ppm).
- Retain a narrative describing procedures, how locations were determined, dates, times, and results of each test. Include floor plan(s) identifying locations for testing.
- Enter the 95<sup>th</sup> percentile of the data collected. This is the number under which 95% of the data collected is captured. For instance, if you collect many readings around the school and find that one or two readings are higher than the others, they may not be captured in this 95<sup>th</sup> percentile number and will not be captured in your score. They are considered outliers.

Reference the LEEDv4.1 Operations + Maintenance credit for [Indoor Air Quality Performance](#) for more details on testing protocols that meet LEED certification standards (Arc data collection is based on these standards).



**DON'T MISS:** The [Measuring PM<sub>2.5</sub> and CO<sub>2</sub> in Schools](#) webcast helps viewers understand the reasons for monitoring and the best practices for conducting measurements.

## OPTIONS FOR COLLECTING TVOC and CO<sub>2</sub> DATA

### Professional air quality evaluation

If designing an air quality evaluation with a professional on school district staff or on contract, use protocols consistent with one of the following methods: EPA TO-1, EPA TO-15, EPA TO-17, EPA Compendium Method IP-1, and/or ISO 16000-6, or other approved method.

## Photo-ionization detectors

At this time, Photo-ionization detectors (PIDs) are an approved method. If using a PID, follow these steps:

- Conduct at least one sampling per representative location of the building within a 12-month period.
- The sampling must occur during normal occupied hours, with the HVAC system starting at the normal start time and delivering outdoor air at the minimum rate.
- In the sampling location(s), position the measurement equipment in the breathing zone, between 3 - 6 feet (900 and 1800 millimeters) above the floor.
- In the sampling location(s), record measurements in  $\mu\text{g}/\text{m}^3$  for TVOC levels and ppm for CO<sub>2</sub> levels. Include original readings and conversion factors if readings were taken in other units. Conversion factors must be specific to the instrument.
- In the “Meters & Surveys” section, under both CO<sub>2</sub> and TVOC, there is a section for “Documents.” Upload a narrative describing procedures, device used, spec sheet and calibration information, how locations were determined, dates, times, and results of each sampling. Include floor plan(s) identifying locations for testing. *(This documentation is required if you certify your project with LEED).*

## OPTIONS FOR ENTERING YOUR AIR QUALITY DATA

### Use a partner app for air quality

Under “Meters & Surveys,” click on the desired air quality metric under “Human Experience.” You will see a section called “Third Party Resources” and a link to view the apps that are compatible with Arc. The Arc platform is always adding integration partners to make data entry easier, and several of these partners help users collect, organize, and enter data into Arc.

### Enter data directly into Arc

There is only one “meter” for air quality readings, but you can enter as many readings as you wish.

#### *Upload Excel Template*

Follow these steps to upload a data spreadsheet:

- Under “Meters & Surveys,” click on the desired air quality metric under “Human Experience.” You will see an option to upload a spreadsheet.
- Click on “Upload a spreadsheet” and then click to download the template.
- Enter air quality data into the template, enter the 95<sup>th</sup> percentile data point, and save the file. Then, return to Arc and click the button to upload the file.
- If multiple evaluations are conducted throughout the year, input each separately and upload a separate Arc template associated with each audit’s time period.

#### *Enter Data Manually*

Follow these steps to make single data entries into Arc:

- Under “Meters & Surveys,” click on the desired air quality metric under “Human Experience” and fill in the required information. On the Data tab, click the “Add Row” button.

- A row will be added below to enter the data reading start and end dates and the reading. Refer to the Human Experience Module video linked above to learn how to calculate the 95<sup>th</sup> percentile data point, which is the number that should be entered into Arc. When complete, click “Update.”

Below are examples of how the CO2 and TVOC data is entered in the calculator.

**CO2 Raw Data**

Location	Data Point	Date	Time	CO2 Reading (ppm)
1st Floor	Lobby	07/15/2016	9:30	579.00
1st Floor	Conference Room	07/15/2016	9:35	632.00
2nd Floor	Office A	07/15/2016	9:40	568.00

**TVOC Raw Data**

Location	Data Point	Date	Start Time	End Time	TVOC Reading (µg/m3 )
1st Floor	Lobby	07/15/2016	14:00	14:45	430.00
1st Floor	Conference Room	07/15/2016	14:00	14:45	400.00
2nd Floor	Office A	07/15/2016	14:00	14:45	417.00

# CONNECTING TO THE CLASSROOM

The [Center for Green Schools](#) recognizes that schools using Arc can benefit greatly by improving the sustainability performance of the built environment, but there are also wonderful opportunities to connect student learning with the operations of a school building and prepare students to succeed in 21st century green careers that value systems thinking and problem-solving.

## ARC LESSONS: Measuring School Sustainability

This lesson set for grades 9-12, available for free on [Learning Lab](#), explores the use of data in determining a building's sustainability performance. Students explore the different aspects of building performance (energy, water, waste, transportation, and occupant satisfaction) using the [Arc Digital Playground](#), a static site with pre-populated data for use in the classroom. Using the platform, students will work to understand how the Arc categories relate to sustainability, what data can be tracked to represent performance for each category, and how a high performing school will differ from an average performing school.

## BUILDING LEARNERS

[Building Learners](#) has been designed by the Center for Green Schools specifically to help you bring your school's Arc data into the classroom, including training for teachers and career connections for students. For teachers looking to help students master STEM concepts, the Building Learners program is a complete, data-driven package that uses your school's eco footprint to bring lessons to life. Students sharpen their analysis and problem-solving skills and observe the benefits of their impact on the school's sustainability performance.

Building Learners is a K-12 education program that uses the operations of a school building to teach students about sustainability and empowers students to use their building as a learning laboratory. Students collect, analyze, and conduct real-world investigations that inform improvements around waste, energy, water, health, and transportation at their school. Working with their school's facility manager and a volunteer green building professional serving as a mentor, students also get exposure to sustainability careers and build positive relationships with members of their community.

Check out the website for more information and write us at [schools@usgbc.org](mailto:schools@usgbc.org) with any questions.

Contact us with any Arc questions at [contact@arcskoru.com](mailto:contact@arcskoru.com)