



Kentucky Department of Education

Our Children, Our Commonwealth

Building Condition Assessment Guide for Asset Planner™ and AuditPlanner™

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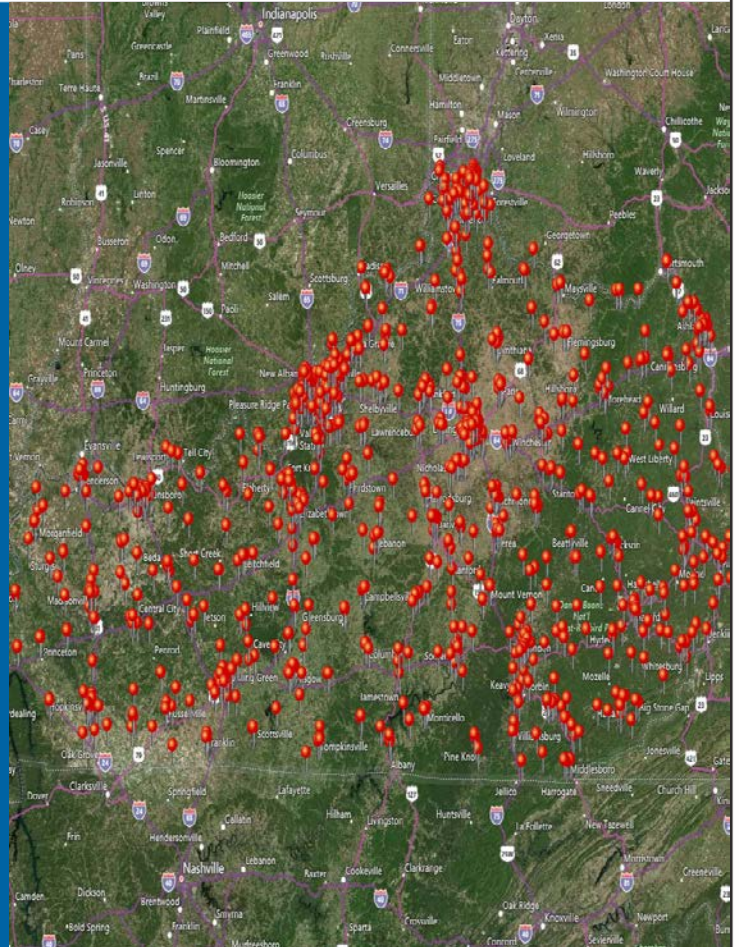


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1. Introduction

The Kentucky Department of Education utilizes Ameresco’s **AssetPlanner™** software to identify and prioritize capital renewal needs, develop capital plans, demonstrate the funding requirements and measure the impact of capital investments. Kentucky Department of Education also utilizes **AssetPlanner™** to calculate and report on the Facility Condition Index (FCI) of their Portfolio. Confidence in the data that resides in **AssetPlanner™** is critical to ensuring:

- The funding requirements of the Portfolio can be reviewed in parallel with other organizational priorities;
- The annual capital planning process appropriately allocates the limited funding to projects with the highest need; and
- The process used to calculate the FCI value is in line with established best practices

This confidence is achieved by establishing and consistently applying best practices-derived processes in data development and management. **The work of the Assessor in validating renewal needs during the on-site assessment is a key component of the school ranking reports.** Integrity of the data collection and review process is paramount in ensuring confidence in the results. The goal of this guide is to provide clarity to Assessors on the Building Condition Assessment process and their role in ensuring confidence in the results.

2. During the On-site Assessment

The Kentucky Department of Education utilizes Ameresco’s Data Development process (outlined in **Figure 1** below) to capture and maintain capital renewal needs for the buildings within **AssetPlanner™**.

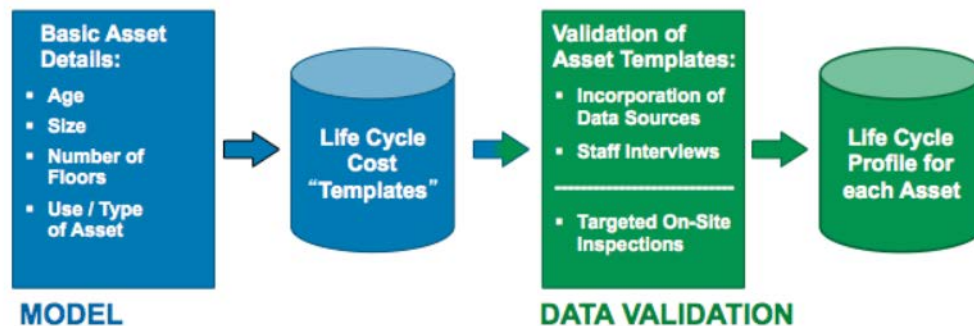


Figure 1: Data Development Process

This process begins with the creation of a “model” life cycle cost template. Using some basic asset details provided by the Kentucky Department of Education (age, size, # floors, building type), Ameresco develops life cycle cost models for each building. The models contain a listing of building element inventory based on the various asset “types” (e.g. Elementary School, Middle School, High School etc.) and established order of magnitude replacement costs and renewal timelines for each major building system and element. Each model includes architectural, mechanical, and electrical components and systems as well as site elements.



AssetPlanner™ follows the ASTM Uniformat II Classification for Building Elements (E1557) - please refer to **Appendix G** for more information.

The second step is to “validate” the life cycle cost template through a visual, non-intrusive on-site assessment. The purpose of this assessment is to provide a visual assessment to understand the actual materials and assets on the building and the visual appearance of serviceability. This is undertaken by downloading the existing information from AssetPlanner™ to AuditPlanner™ for site assessment. The software refers to this process as an “Audit”.

2.1 Assessment Reminders

Before commencing, ensure you have permission to contact the site and arrange for access. It is recommended that Assessors review and become familiar with this entire guide. Ensure that:

- You have a valid and functioning AssetPlanner™ login;
- You have been assigned the Audit;
- The Audit listing contains the correct buildings/sites;
- You are familiar with the ASTM Uniformat II Classification system and hierarchy (please refer to **Appendix G**);
- You know and understand the recommended Best Practice surrounding back-up of AuditPlanner™ data (please refer to **Appendix A – AuditPlanner™ Back-up Guide**); and

2.2 Assessment On-Site Interview Questions

It is recommended that the auditor conducts a brief interview while on site with the site contact to determine additional information relating to the building, recent renovations or issues. Below is a sample questionnaire that you can use on-site or send out in advance of the site assessment:

- **Facility Details**
 - Can you confirm the age of the facility? (e.g.: “My report says 1990 but it looks much older can you confirm?”)
 - Does the facility have any additions or have there been any comprehensive renovation projects?
- **Issues/Concerns**
 - Are there any current or ongoing problems at the facility that we should know about (e.g.: leaks, temperature issues, mechanical/electrical problems, etc.)?
 - Is there anything that you are unsure of and would like us to take a closer look at during our site assessment?
- **Planned Work**
 - Have there been any recent major replacement or repair projects that have taken place at this facility?

- Have there been any engineering studies/reports or building condition assessments over the last 5 years?
- Are there any upcoming major replacement or repair projects? (e.g.: planned projects or quotes for work, etc.)
- Is there a capital plan or list of projects that is available electronically (e.g.: excel, word, pdf etc.)?

This short questionnaire should help to fill in the blanks when it comes to unknown items such as concealed systems or the specific year that elements were recently replaced (last major action year). It will also help to identify areas of concern or ongoing issues that can be investigated further during your site review and documented as part of your report.

2.3 Assessment Cost Guidelines

When preparing cost estimates for your building condition assessment reports it is important to keep in mind the following:

- Pre-loaded cost values come from the model templates and reflect general assumptions based on basic asset details (refer to *Figure 1: Data Development Process* above). The model values are provided for reference purposes only. **It is expected that the assessor will update all cost values based on their own experience and professional opinion.**
- Cost estimates should be consistent across all reports for same elements and actions. For example, windows of roughly the same size and specification should carry the same replacement and action cost estimate across all facilities being assessed that have these same windows. If there are differences leading to differing cost estimates, please note them in the Element or Action commentary columns. Cost Estimates for all elements are to be calculated based on the quantity/actual area of the element.

2.4 Completing the fields in AuditPlanner™

It is to be expected that you will come across building elements where the true condition is not evident due to the visual, non-intrusive nature of the AuditPlanner™ site assessment. For cases where these elements have exceeded their estimated useful lives or there is a known issue with the element, a “Study” Action will have to be recorded to determine the exact conditions (as well as second “Replacement” Action). Please refer to the **Appendix D - Study and End of Life Matrix** for additional guidance.

Element & Action Consistency:

- Ensure that the recommended “Action Year” matches the timelines associated with your selections in the “Overall Condition” and “Urgency of Action” fields.
 - For Example: If a Replacement Action exists within the first 1-3 years the “Overall Condition” should not be “Good” and the “Urgency of Action” should not be “Low”.
- Ensure that the “Replacement Value” of an Element matches the “Replacement Action” cost.



- If a “Repair” or “Study” Action is suggested, always ensure that a “Replacement” action (cost/year) is also included and include a note in that Action to refer to the Study Action for more details.
- In general, all Elements should include an End of Life, full Replacement Action, with the exception of element A10/A20 Foundations and element B10 Superstructure. These systems are typically not forecasted for replacement but may require repairs if a deficiency is evident or noted by site staff.

2.4.1 Facility-Level Entries

Upon downloading each audit will contain basic facility level information such as Construction Year, Size, Number of Floors and Units. The information provided is a starting point for the audit and must be reviewed and corrected if necessary based on site observations. In addition to making corrections to the base details the auditor must fill out a building description and the associated Audit summary fields (General, Architectural, Mechanical, Electrical). The auditor must also take a representative photo of the facility as well as any different elevations or differences in the structure.

Audit:	Audit # and Summary This field is not editable.
Name of Facility:	The KDE Facility name. This field is not editable.
Address:	This field is for the full street address only (no city or state). Do not use abbreviations (e.g.: Dr for Drive, Ave for Avenue, St for Street, etc.) as the system uses this address for GIS mapping. Correct it if it is incorrect.
Construction Year:	Year the building was constructed. Assessors are responsible for confirming the construction date. Correct as necessary.
Size of Facility:	If the original size provided is incorrect please update it accordingly: For Facility Assets assessors are responsible for confirming the number of heated square feet of building space, accurate to +/- 7% for each building being assessed. For Site Assets please review the size and update according to the full site area, which is to include the building footprint.
Floors Above Ground:	Number of floors above ground, including the ground floor.
Description:	For Facility Assets enter a brief description or summary of the building including items such as any additions with different construction years than the original, unusual construction types or other features (such as heritage status), and if applicable any differences noted in Facility Name. <i>e.g.: “Smallville Elementary School is a 1-storey school built in 1968. The gymnasium was added to the rear of the building in 1997”</i> For Site Assets enter a brief summary of the site including any significant site features <i>e.g.: “Smallville Elementary School is situated on a rural site covering 5 acres and includes 55 parking spaces, a playground and chain-link perimeter fencing.”</i>
General Summary:	Provide a general summary of the audit results. Note the general condition of the facility, any modernizations and a brief summary of any major concerns. Any specific notes from

	<p>the onsite assessment can be included in this section (e.g. “Unable to access the roof due to lack of roof hatch key during assessment.”).</p> <p>e.g.: “The roof was reported to have been replaced in 2006 and was reported to be in good condition. The external walls, majority of windows and the doors were reported to have been replaced in 2006 and they were observed to be in good condition. The windows at the back of the building are the older steel framed single glazed windows and they were observed to be in poor condition. The domestic hot water heaters in the mechanical room are in good condition and should be considered for replacement within approximately six years.”</p>
Architectural Summary:	<p>Provide a general summary of the Architectural systems. Note the general condition of the architectural systems, any modernizations and a brief summary of any major concerns.</p> <p>e.g.: “The exterior walls of the building are mainly clad with stucco, along with a portion of Fiber Cement siding at the building rear on the ground level. The walls were observed to be in good condition. Painting is required in the short term. The windows are a combination of newer, double-glazed, vinyl-framed units and older, steel-framed units. The vinyl-framed units were observed to be in good condition. The older, steel-framed units require replacing in the short term. The roof consists of two-ply SBS bitumen membrane and sloped roofing with asphalt shingles on the gazebo. The Interior finishes include carpet and vinyl flooring throughout the building, drywall partitions and ceilings, and ceramic tiles in the bathrooms.”</p>
Mechanical Summary:	<p>Provide a general summary of the Mechanical systems. Note the general condition of the mechanical systems, any modernizations and a brief summary of any major concerns.</p> <p>e.g.: “There are two domestic hot water heaters in the mechanical room on the main floor. These were reported to have been installed in 2008 and are in good condition. The classrooms are heated by electric baseboard heaters with the common hallways served by two roof-top packaged units. The baseboards, installed in 2008, and the roof top units, installed in 1998, were observed and reported to be in good condition. Plumbing fixtures appear to be in working order, however some consideration for water conservation should be reviewed. Fire protection is provided by a sprinkler system and fire extinguishers throughout the remainder of the building.”</p>
Electrical Summary:	<p>Provide a general summary of the Electrical systems. Note the general condition of the electrical systems, any modernizations and a brief summary of any major concerns.</p> <p>e.g.: “The building is provided with a 400 amp service and distributed to circuit breaker panels. Electrical panel boards and branch wiring appear to be from the buildings renovation in 2006. These systems are in good condition. We recommend infrared testing in order to ensure safe and efficient operations. The interior lighting varies with linear, compact fluorescent and some incandescent fixtures. The majority of incandescent and fluorescent lighting fixtures were reported to have been installed in 2006 and are in good condition. Other electrical components include exit and emergency lights and fire alarm system, which are all in good condition.”</p>

2.4.2 Element-Level Entries

The goal of reviewing elements onsite is to provide a general summary of the current element condition, including actions required by the elements to maintain them in good working order for the long term. This information will be used to plan and prioritize capital renewal projects, so it is important that your information entries (and associated photographs) establish a clear picture of onsite conditions and required actions to enable planners and decision makers to appropriately respond. Ensure you take a photograph of any nameplates of building systems equipment and utility meters. When possible make sure that the model and serial numbers are legible in the photograph.



When to create multiple Elements?

Create multiple Elements, using the “Add” button from the Element screen, whenever you are dealing with one or more of the following: *Differing Age, Differing Condition, or Differing Types* of Elements. Generally speaking if the Cost or Lifecycle of any items are different, then they must be represented as their own Elements.

For example, a building may have a single roofing type, but a portion was replaced with the remainder being the original installation. These two portions should be entered as separate elements, with their different “Last Major Action Year”. In this example, you should ensure that the recently replaced portion is intended to last a typical full lifecycle and NOT be replaced with the remaining portion. If it is intended to be replaced with the remaining portion there is no need to create a separate element, just note this in both the Element and Action Commentaries.

Examples:

Differing Types (with different life cycles):

- Modified Bitumen SBS vs Built-Up Roof (BUR) built up roofing sections
- Brick exterior walls and stucco exterior walls.

Differing Age:

- Flat roof sections installed in different years
- Boilers installed in different years

Differing Condition:

- Two roof sections installed in the same year, one in poor condition and one in good condition.

Building Sections/Additions:

Schools that have additions or building sections is another scenario that requires the creation of multiple elements. If the School you are inspecting contains multiple additions or sections you will need to identify the elements that belong to each section. For example, if you have a building with 2 sections (1975, and 2001) you will need to build your inventory list using the ‘Section’ field on the element page to differentiate between elements that are associated with the 1975, 1985 and 2001 sections.

Some examples:

- Element #1, B30 Roofing, Section: 1975 Addition, Description: Built-Up Roof, Condition: Poor
Element #2, B30 Roofing, Section: 2001 Addition, Description: 2 Ply SBS, Condition: Good
- Element #1, C3020 Floor Finishes, Section: 1975 Addition, Description: VCT, Condition: Poor
Element #2, C3020 Floor Finishes, Section: 2001 Addition, Description: VCT, Condition: Good

Note: Where items are “common” to all sections you would leave the section field blank which indicates that the system is shared or of a similar type/age/condition across all building sections. An example of this may be a centralized cooling/heating system that serves both sections.

Deleting Elements

Ensure that you use the “Delete” button from the Element screen to remove an element. **Do not note it as no longer present in the description.**

Element Level Fields:

Element:	UNIFORMAT II category name is not editable	
Element Number:	Not editable. This refers to the number of categories and not the quantity of the element.	
Last Major Action Year:	Enter the year that the element was last replaced. In the case of Foundations, Exterior Walls or other systems that are typically not replaced you can use this field to indicate the year in which a major refurbishment took place.	
Overall Condition	Identify the overall condition of the entire element. The year ranges listed below relate to the Actions associated to the Element. Refer to “When to create multiple Elements?” above for additional guidance.	
	Good	Element is performing adequately and no work is foreseen in the next 5+ years
	Fair	Element is operational but replacement or major repair action is expected in 3-5 years
	Poor	Element requires replacement or major repair action in next 1-3 years
	Critical	Element is past the point of economic repair or is not functioning and should be replaced or repaired within 1 year
Replacement Cost:	The replacement cost field should capture the total value of the element. Be sure that this value matches up with any associated “Replacement” actions.	
Section:	Specify the building section or addition that the element belongs to using the available drop-down values (e.g. 1975 Addition, 1985 Addition, 2001 Addition) Refer to “When to create multiple Elements?” for additional guidance.	
Location:	This field is used to describe the exact location of specific items within the building where further clarity is required (e.g. Maintenance Room 2, First Floor Corridor, etc.)	
Element Description:	The element description should be utilized to provide a brief description which must include: general description of overall system, type, size, make, model, serial, quantity. <i>e.g. “Two Boiler Brand, 1,500,000 BTU, gas fired, mid-efficiency 85% boilers model BOIL-85, serial no XX##### (boiler 1 - Mechanical) and serial no XX##### (boiler 2) installed in 1985”</i> <i>“Domestic Water Distribution – copper mains, PEX distribution to classrooms”</i>	
Commentary:	Enter a description for the element detailing any additional information relating to its condition and any on-site observations. If no pertinent additional information is present, field can be left blank.	



	<p>e.g. <i>“Listed as Fair Condition due to the major repair required on the South Elevation due to observed significant moisture ingress, otherwise remaining three elevations are in Good Condition.”</i></p> <p>For Category B- Shell elements, please include the quantity (or an estimate if the quantity is not available). Examples include:</p> <ul style="list-style-type: none"> • <i>“12,500 sq. ft. of Modified SBS roof”</i> • <i>“estimated 120 windows”</i> • <i>“40% of wall area is clad with brick veneer”</i>
<p>Validated (Y/N):</p>	<p>This field has no impact on the data – it is entirely for the auditor’s personal use to keep track of Elements reviewed while on site. It does not need to be utilized.</p>

2.4.3 Action-Level Entries

The goal of reviewing Actions onsite is to provide a general summary of the Action required by elements to maintain them in good working order for the long term. This information will be used to plan and prioritize capital renewal projects, so it is important that your information entries (and associated photographs) establish a clear picture of onsite conditions and required actions to enable planners and decision makers to appropriately respond. **Ensure that you take photographs of deficiencies noted in the action items at the element level, especially for actions required within the next five years.**

When to create multiple Actions?

Create multiple actions for ***different action types*** (repair, replace, install, study). Remember if you are creating a repair or study action you must add another action to represent the full replacement value and forecasted year. ***Do not create multiple actions to represent phasing, allowances or for other budgetary concerns.*** The purpose of the capital plan is to identify building needs and present an accurate picture of condition, budgets and allowances can then be developed based on the findings. If you phase or include budget allocations this will understate the capital need and the capital plan will be inaccurate.

For Actions:

- Verify that Actions exist in appropriate years based on observed conditions (not based on budgetary concerns).
- If the scheduled Action Year is incorrect please adjust the year according to observed site conditions. This should align with your entry for “Overall Condition”.
- Verify that Action Costs are appropriate based on recommended action.
- DO NOT include allowances or maintenance items (e.g. replace door handle on Classroom 121 or allowance for replacement of one door every year)
- Ensure that an Action Brief Description has been entered (e.g. Replace Boiler.)
- Where applicable include a justification or further detail about the action in the Action Commentary (e.g. we recommend replacing the boiler with an energy efficient model.)
- Ensure that Priority Answers have been selected.
- Assign “Low Urgency” and/or “Overall Condition: Good” Action items over multiple future years: do not assign all these items to one future year as this has an unintended, adverse effect on FCI.

Action Level Fields:

Action Number:	This refers to the number of action types per component. Not editable	
Action Cost:	The cost to perform the action in current year dollars, including removal, disposal and replacement. Do not include allowances – this should represent the full replacement.	
Action Year:	The year that the action is to be conducted.	
Repeat Interval (years):	The Lifecycle of the element. The template will generate a general assumption of how long a typical element will last. In most cases this will not require modification however it is expected that the auditor will adjust the Repeat Interval based on observed system(s) onsite.	
Action Type:	Replacement	Element is at the end of economic life and should be replaced
	Repair	Element can be repaired and its life extended. Remember to also include the associated “Replacement” action item.
	Install	Element that didn’t exist before and is planned to be installed.
	Study	A deficiency exists (or is likely to exist) and a study should be commissioned to determine scope of work and cost. Refer to Appendix D - Study and End of Life Matrix for additional guidance. Remember to also include the associated “Replacement” action item.
Life Safety / Code Related?	Life Safety or Code issues that require Immediate Attention should be brought to the attention of the building operator and the Kentucky Department of Education. If code issues are apparent, noted or observed select the appropriate item below. For certain elements that have reached their estimated useful lives or show deficiencies that could cause a safety risk (e.g. old wiring, corroded gas piping, etc.), the “Safety Risk” drop down should be selected. Tripping hazards, loose handrails, visible mold, asbestos (friable, non-encapsulated) damaged stairs, etc.) should also be considered as “Safety Risks”. A brief description of the safety risk should be included and a picture. The action should be “Urgent” and in the current year.	
	No	The action is not related to code / life safety
	Grandfathered Code Issue	The action will need to comply with current code if it were to be replaced or repaired.
	Immediate Code Issue	The action is immediately required to comply with applicable code.
	Safety Risk	The action will help avert serious injuries or health deterioration.
Adverse Effect on Security?	All security issue should be brought to the attention of the building operator and the Kentucky Department of Education as soon as they are discovered. Examples of Security-related issues include: doors that do not close properly, damaged door hardware, poorly lit building and site areas, lack of cameras or security monitoring equipment, etc.	
	No	Deferring this action will not impact building security.



	Yes	Action is required to address noted security issues. Deferring this action will have an impact on building security.
Risk of building shut down?	Examples of Elements that could potentially or partially shut down a building include active roof leaks, non-redundant heating plant, electrical switchgear and panelboards and failed fire alarm systems.	
	No	Failure of this element will not cause a building shut down.
	Partial	Failure of this element will cause a partial building shut down.
	Full	Failure of this element will cause a building shut down.
Accessibility Related?	Building condition assessments are not generally detailed accessibility reviews. However, if you notice an accessibility issue, concern, or need for improvements please select the appropriate response below. Specify the issue or requirement within the commentary field.	
	No	This action is not related or will have no impact on building accessibility.
	Yes	This action is required to address an accessibility issue, concern or requirement.
Operation / Energy Savings	Will this Action to the Element result in operational savings (less maintenance or maintenance calls, avoid unplanned repairs) or result in energy savings (new, efficient element or improve the overall energy use of the building)? This field is often used to filter for energy-use reduction measures.	
	N/A	The action will not impact operational or energy savings
	If deferred, operating costs increase	If this action is deferred operating or energy costs will increase. <i>e.g.: If this action is done in the specified year, additional costs will avoided through reduced energy, operations and maintenance calls, and avoidance of unplanned repairs, especially if these are already being experienced.</i>
	Moderate Savings	The action will result in moderate operational or energy savings. <i>e.g.: Converting T-12 to T-8 lamps, replacing single pane to double pane windows, etc.</i>
	Significant savings	The action will result in significant operational or energy savings. <i>e.g.: Converting to more efficient boilers and/ or furnaces, improve thermal performance of building envelope, etc.</i>
Urgency of Action?	Urgency of Action is assigned based on the Assessor's judgment as to whether an action can be deferred or not. If an Action cannot be deferred, then that should be considered an Urgent action. Things to consider: Will deferral of required Action(s) to this Element cause an increase in maintenance costs and/or make the required Action more expensive in the	

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	future? Is there a potentially serious issue or non-functional system that cannot be deferred? Is it worth performing this Action now to make the Element last longer?	
	Urgent	Action cannot be deferred and is necessary to get element functioning again or avoid imminent failure
	High	Action cannot be deferred and will be necessary to ensure continued element functionality for the next 1-3 years .
	Medium	Action can be deferred and/or will be necessary to ensure continued element functionality for the next 3-5 years .
	Low	Action can be deferred and/or will be necessary to ensure continued element functionality beyond 5 years
Action Summary:	<p>Provide a brief description of the work to be conducted. Examples include:</p> <ul style="list-style-type: none"> • <i>Replace boiler</i> • <i>Conduct a Study to determine if the crack in the basement wall is an issue</i> • <i>Finish form tie sealant patches on wall adjacent to main entrance, to match rest of wall</i> • <i>Replacement of skylight along West perimeter of building, North of main entrance</i> • <i>Replacement of brick tile in main entrance lobby</i> 	
Action Details:	<p>Provide a longer explanation of the deficiency observed and justification for why the action is or will be necessary. You must also utilize this field to include any quantities, costs or measurements used to calculate the overall Action Cost. Examples include:</p> <ul style="list-style-type: none"> • <i>We recommend replacing the boiler with a more energy efficient condensing type</i> • <i>Brick tile appears to be quite durable; replacement may only be needed when finish becomes "dated".</i> • <i>Modified bitumen roofing: 4550 square feet* \$10/sq. ft. = \$45,500. The modified bitumen roof membrane is reaching its projected useful life.</i> • <i>Linoleum flooring is in need of replacement due to cracking and peeling. About 600 square feet* \$6/ sq. ft. = \$3600</i> 	



3. After the On-site Assessment

At your earliest convenience, it is ***strongly recommended*** that you perform a ***manual back-up*** of the data that have just collected in AuditPlanner™. A manual backup secures your field data and provides a fall back in the case of unforeseen hardware or software issues (e.g. a lost or broken device). It is the auditor's responsibility to ensure that they have backed up their work and store the data in a safe place. Please refer to **Appendix A – AuditPlanner™ Back-up Guide** for more information.

3.1 Uploading from AuditPlanner™

Once you have completed entering and reviewing the building condition assessment data within AuditPlanner™, and backed up your data, the next step is to upload it into AssetPlanner™. To begin, first enable an internet connection on your device, then log into AuditPlanner™. Select the audit you would like to upload and then from the main audit page tap on “Upload/Sync”.

When uploading you will be asked if it is a “Final Upload” select “Yes” if you have fully completed your Audit (ready for KDE review), select “No” if you are looking to sync your data to AssetPlanner™ and continue working in AuditPlanner™.

Once you have uploaded a “Final” audit inform the Kentucky Department of Education via email so that the review process can begin.

A word of Caution...

DO NOT remove any audit from your device unless you have manually backed up your data AND uploaded/synced the audit to AssetPlanner™. Once an audit is removed from AuditPlanner™ the data is deleted permanently. The process of removing an audit is irreversible and the same is true if you delete the AuditPlanner™ App from your device.

Appendix A: AuditPlanner™ Back-up Guide

The recommended best practice for AuditPlanner back-ups includes:

- Nightly back-ups through iTunes on a separate computer (guide shown below)
- Synchronization (Upload/Sync) of assessment data into AssetPlanner™ even if the Audit isn't finalized. This will save your work-in-progress audit data on the AssetPlanner™ server in case it needs to be restored.

Ameresco is available to assist assessors with any issues they may encounter with the AuditPlanner™ application, provided they can be supplied with the appropriate details. In order for Ameresco to troubleshoot, Assessors will need to provide the manual back-up file and details of the issue. For example:

- For Audit 345, element D1020 Fittings, I am unable to add an additional picture.

A clear description will allow Ameresco the opportunity to quickly resolve technical issues *and* forward the backup file to the programming team for debugging. Without these two items this job becomes very difficult.

Installing iTunes and performing a Manual Backup of AuditPlanner

Step 1

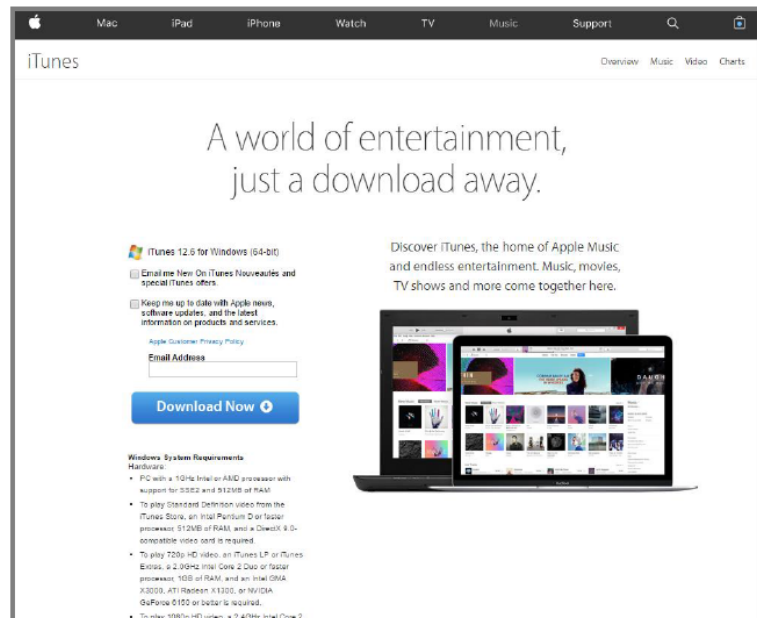
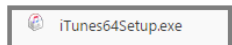
Navigate to

www.apple.com/itunes/download

Click the blue Download Now button

You do not need to enter an e-mail address

Once the download has completed double click the iTunes Setup exe to **install iTunes on your computer.**



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Installing iTunes and performing a Manual Backup of AuditPlanner

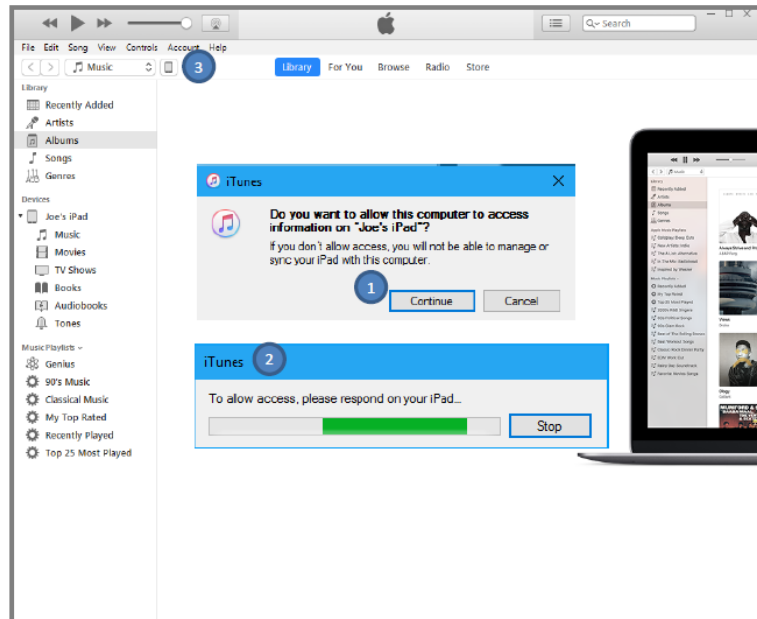
Step 2

Open iTunes

Connect your iPad or iPhone to the computer using the cable provided.



1. You will be prompted to allow your computer access to your iPad or iPhone, click **Continue**.
2. Then on your iPad or iPhone tap on the **"Trust"** button when prompted.
3. Tap on the **tablet/phone icon** in the menu bar next to the "music" drop down.



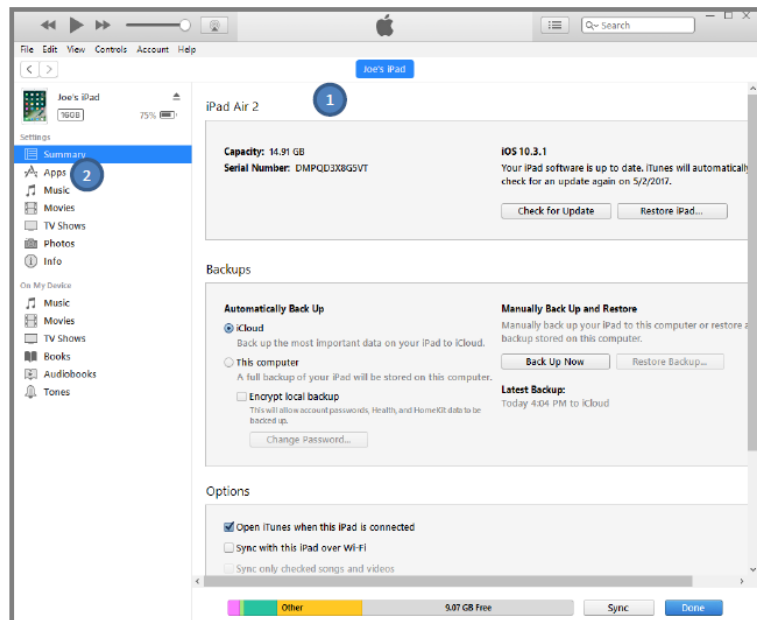
Step 3

1. iTunes will display some basic details about the device in the main panel. Additional device pages can be accessed using the list to the left.
2. To locate your AuditPlanner backup files click on **Apps**

Note:

When you first connect your iPad or iPhone to iTunes you may be asked to provide a name for your device and to perform a backup.

*However this automated iTunes backup process is **NOT** how you backup your AuditPlanner data. This process is only for your device and will allow you to restore the device settings in the event you lose/break it. It does not backup Application data.*



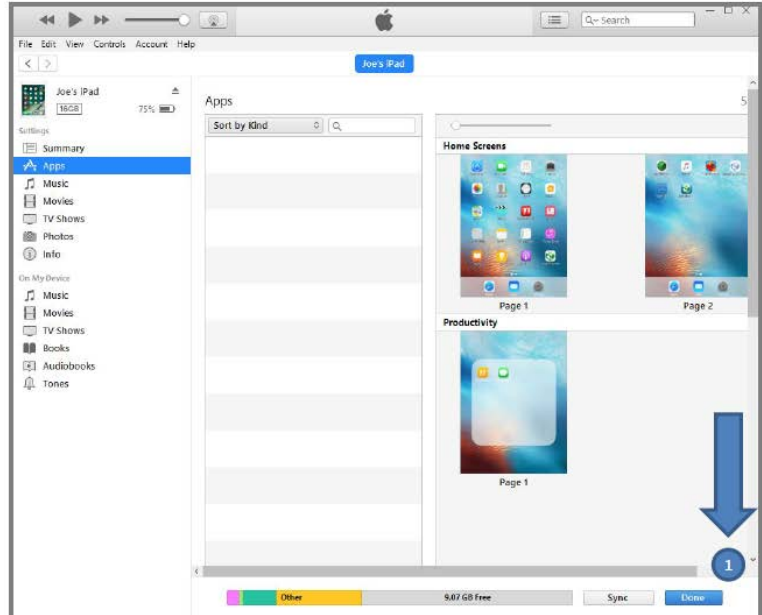
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Installing iTunes and performing a Manual Backup of AuditPlanner

Step 4

1. Once on the App page scroll down to the bottom of the page.



Step 5

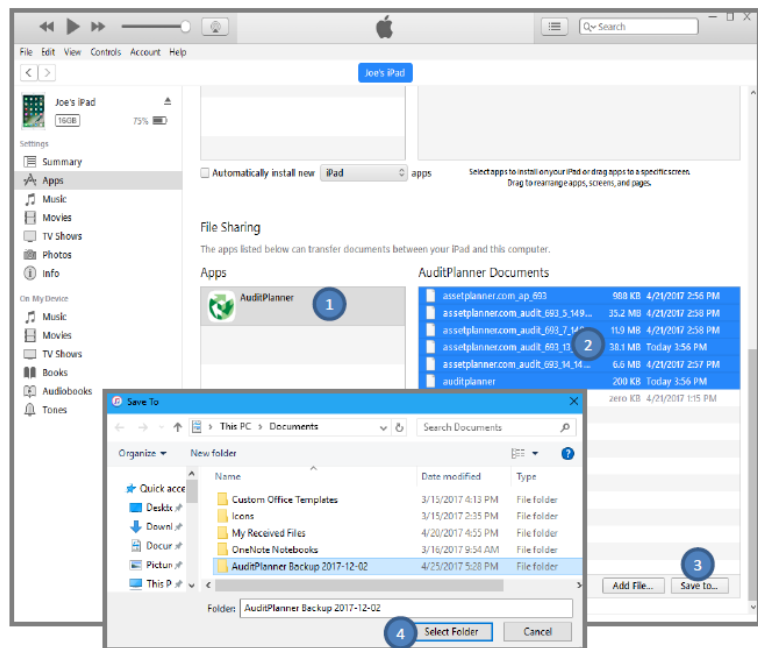
Under File Sharing you will see any Apps that allow you to view their files.

1. Click on AuditPlanner from this list to view the backup files.

2. Select all files by clicking on the first file then hold shift and select the last file.

3. Select "Save to..." to save the backup files to your computer.

4. Save the files to a folder on your computer. It is strongly recommended to name the folder with the date the backup was performed.



End of Appendix A: AuditPlanner™ Back-up Guide

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Appendix B: FAQs for Elements

Building Element

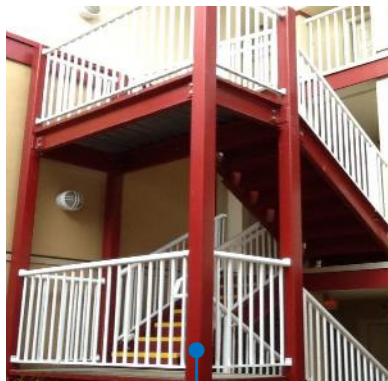
Site Element



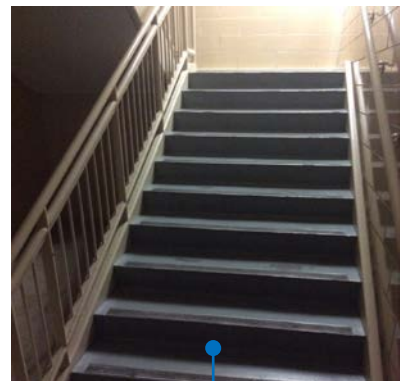
Remember to create a second element when there are two or more building sections and/or differing inventory items. In the above example, you would have two elements representing the main roof and the canopy style roof covering. Another common example (not pictured above) is different exterior finishes such as brick & stucco.



G2030 – Pedestrian Paving
 (Exterior Stairs not part of structure)



B10 – Superstructure
 (Exterior Stairs/Deck and/or support Columns connected to building)



C20 – Stairs
 (Interior stairwells & stairs)

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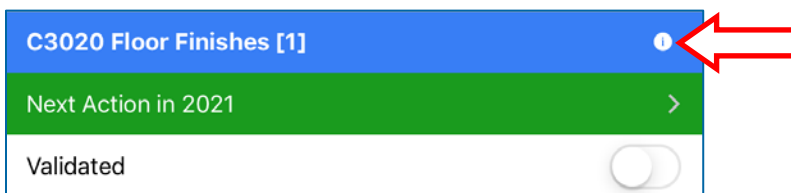


FAQs for Elements

- **Help I Can't Find an Element:** By default, AuditPlanner™ will hide any items that have been deleted (or 'inactive'). However, if you need to add an Element that is not currently visible on your list tap on "Add Element" in the bottom left corner of the screen. This will allow you to search from the complete element listing and add any missing inventory items to your audit.



- **Help on selecting the correct Element:** if you are unsure which element to categorize an inventory item you can view the definition by tapping on the 'i' icon in the top right corner of the element.



- **Parking Garages or Parkades** **should not** be added to the Site Asset. The category G2020 Parking Lots is for surface parking only. They should be included in the Facility Asset under **A20 Basement Construction**. This includes any related decking/slabs and/or waterproofing membranes.
- **Exterior Stairs & Ramps** are to be entered against the Site Asset category **G2030 Pedestrian Paving**. C20 Stairs is for interior stairs only.
- **Fire Escape/Structural Exterior Stairs/Walkways:** Enter any structural stair or exterior passageway structures (think motel style) against **B10 Superstructure**
- **Exterior Fencing & Hardscaping Features:** Enter any fencing or site hardscaping features under **G2040 Site Development**. Please create additional elements for each unique site element (e.g: 1: Site Fencing, 2: Gazebo, 3: Metal benches, etc.).

Appendix C: Additional Assessment Reminders

List of Items Required for On-Site Assessment:

- Permission to proceed with the Assessment and to contact site staff
- Arrangements made with site staff to attend site
- Fully charged device with AuditPlanner™ loaded and assessment sites downloaded
- Writing utensils and notepads
- Flashlight with fully charged batteries
- Screwdriver (optional)
- Identification
- Camera with flash, fully charged battery

Typical AuditPlanner Assessment Scope:

1. Interview the building occupants as well as existing maintenance and ownership personnel, discuss performance history and review copies of previous reports, drawings, photographs, and records of prior repairs.
2. Conduct a Visual Examination of the overall building assemblies. Commentary to note should include exposure of assemblies to the exterior environment, material types, and the interfaces between these. The assemblies and components reviewed should include, but not limited to, roofs, walls, windows, grading (i.e., soil, concrete, etc.), balconies and decks, exposed-column construction, overhangs, gutters, planters, all interior components, M&E services, site components, below-grade structures, and accessory structures. This portion of the assessment provides opportunity to verify the inventory of existing components on the building.
3. Evaluate the physical condition of each of the assemblies and components identified in the Visual Examination, and estimate the continued serviceability of the materials. Attention to interfaces between assemblies (roof or deck to wall, window perimeters, etc.) should be paid to determine how well the exterior enclosure is managing moisture movement.
4. Assess the number of heated square feet of building space, accurate to +/- 7%, for each building being assessed and record this value in AuditPlanner™.
5. Complete the summary fields for Architectural, Mechanical and Electrical within AuditPlanner.

Appendix D: Study and End of Life Matrix

The following matrix applies to circumstances where the Assessor cannot appropriately determine the Overall Condition of an Element and/or determine the appropriate Action required (Replacement, Repair) and associated costs. **Rationale must be included with all Study Actions, as well as photos of the circumstances driving the Study Action.** **Please Note:** A study is not required if the Assessor is able to appropriately determine Overall Condition and the appropriate Action required (Replacement, Repair) and associated costs.

Element Type	Overall Condition	Urgency of Action	Action Year
Life Safety or code/regulatory issue, and more subject matter expertise is required to fully assess condition, major issues present or reported	Critical	Urgent	Current Year
<i>e.g.: Fire Alarm panel has constant trouble alarms, generator issues, fire sprinkler leaks, dry system compressor issues, etc.</i>			
Not Entirely Visible, end of Life Cycle, active major issues present or reported, major building element	Critical	Urgent	Current Year
<i>e.g.: Active and major domestic water leaks, active and major roof leaks, active elevator issues, etc.</i>			
Not Entirely Visible, end of Life Cycle, some majors issues present or reported, major building element, Main Electrical Distribution, Switchgear and Panelboards	Poor	High	Current Year
<i>e.g.: Settlement issues/ cracks in Foundation or Superstructure, major roof leaks, major elevator issues, major envelope issues, domestic piping leaks, underground services (water mains, sewer lines), etc.</i>			
Visible, end of Life Cycle, active major issues present or reported	Critical	Urgent	Current Year
Visible, end of Life Cycle, some major issues present or reported	Poor	High	Current Year
Visible, end of Life Cycle, no issues present or reported	Fair	Study not required	
<i>e.g.: Roof, Envelope (including windows and doors), HVAC equipment, domestic piping, etc.</i>			

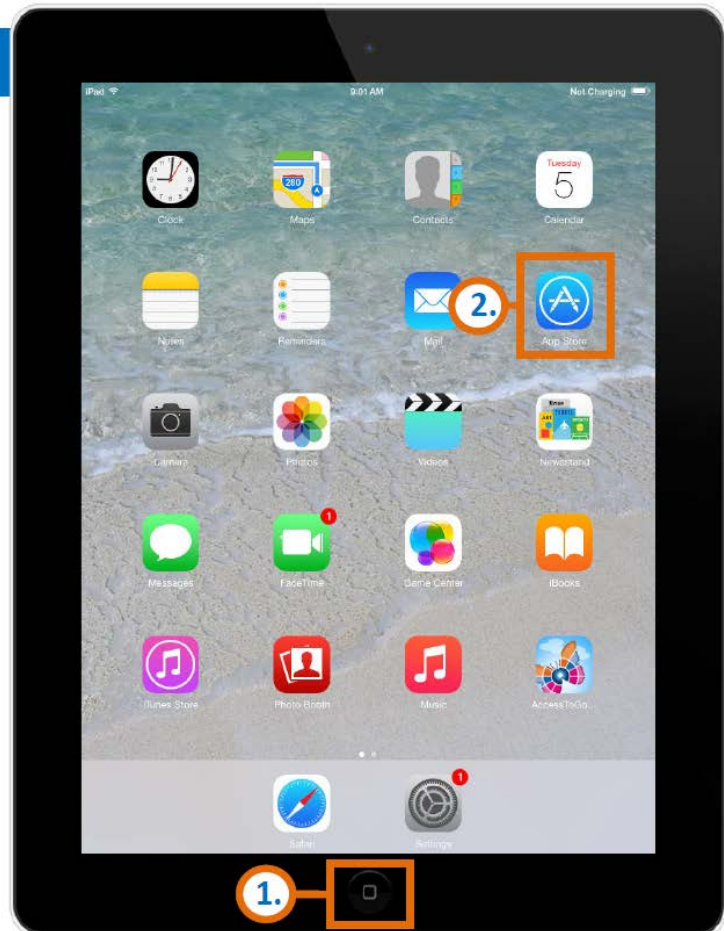
Assessors are responsible for providing the Replacement Action (with the Urgency of Action and Action Year reflective of the Overall Condition) for all Elements that require a Study Action. Ensure you include a note to refer to the associated Study Action for more details. This allows for the Replacement to be including in budgeting and forecasting processes pending the Study results.



Appendix E: Guide for the installation of **AuditPlanner™**

Accessing the App Store

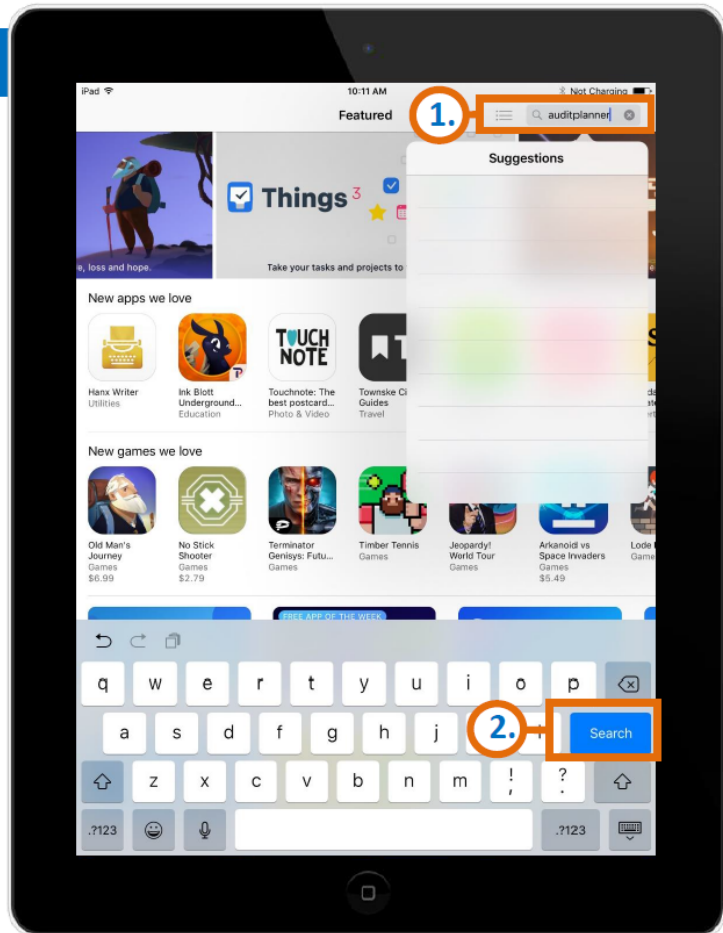
1. Turn on your iPad and go to the home screen. If you are currently viewing an app click on the physical “home” button.
2. Tap on the blue App Store icon



Guide for Installing AuditPlanner

AuditPlanner in the App Store

1. Tap into the search bar in the top right corner of the App Store.
2. Type in **AuditPlanner** and tap **Search** on the Keyboard.



Guide for Installing AuditPlanner

Downloading AuditPlanner

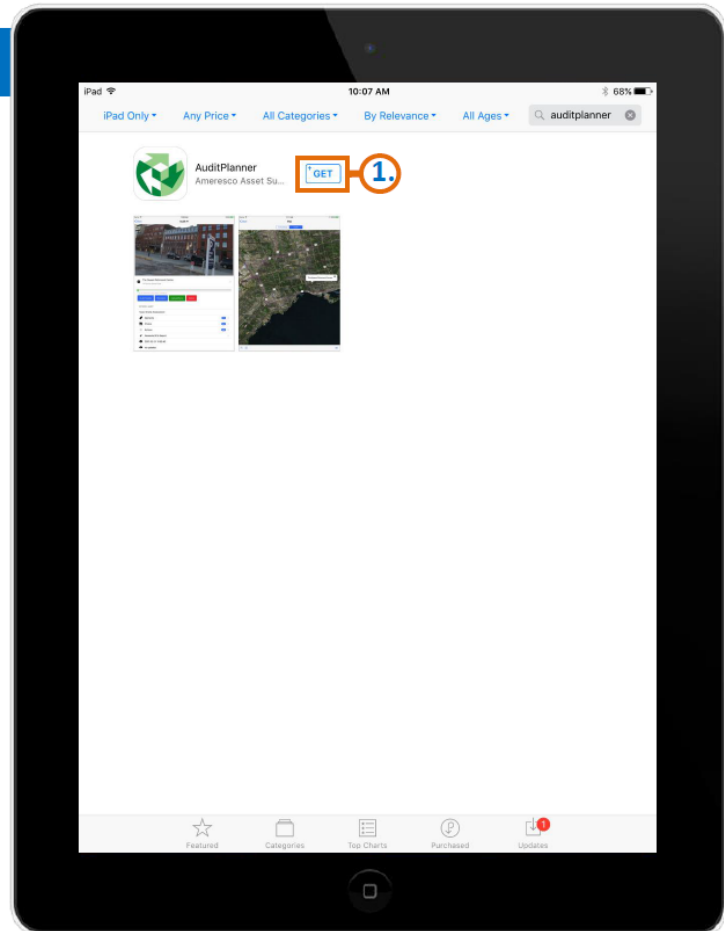
The application that we want to download is called **AuditPlanner**

1. To download the app tap on the button that says “**Get**”
2. If you have an Apple ID already configured you will be prompted to enter your password for the App store.

Note:

If you don't have an Apple ID follow the instructions on Page 5.

If you already have an Apple ID skip to page 6.



Guide for Installing AuditPlanner

Don't Have an Apple ID?

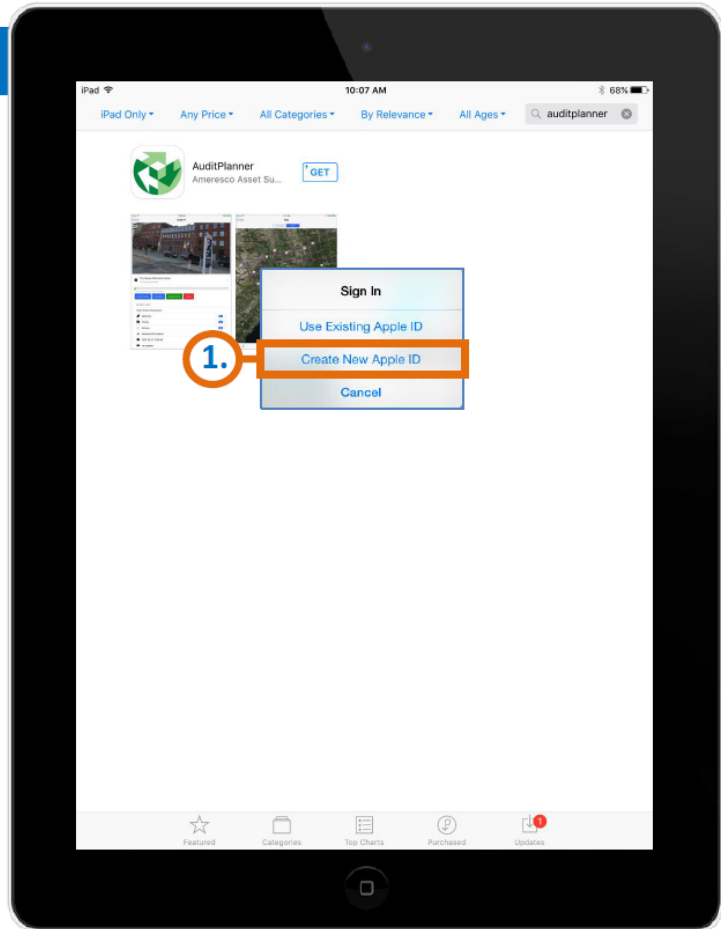
If you don't have an iTunes account when you tap on the "Get" button you will see a pop-up message asking if you want to use an Existing Apple ID or if you want to Create a New Apple ID.

1. Tap on **Create New Apple ID**

You will then be guided through the steps to set up an Apple ID.

Notes:

- It is recommended to use your work e-mail address.
- If the iPad will be shared consider creating a shared account and password that everyone can use.
- Your Apple ID is maintained through Apple and is not related to Asset Planner. But it is required to download AuditPlanner from the App store.
- Remember your username and password as you will need it to download App updates.



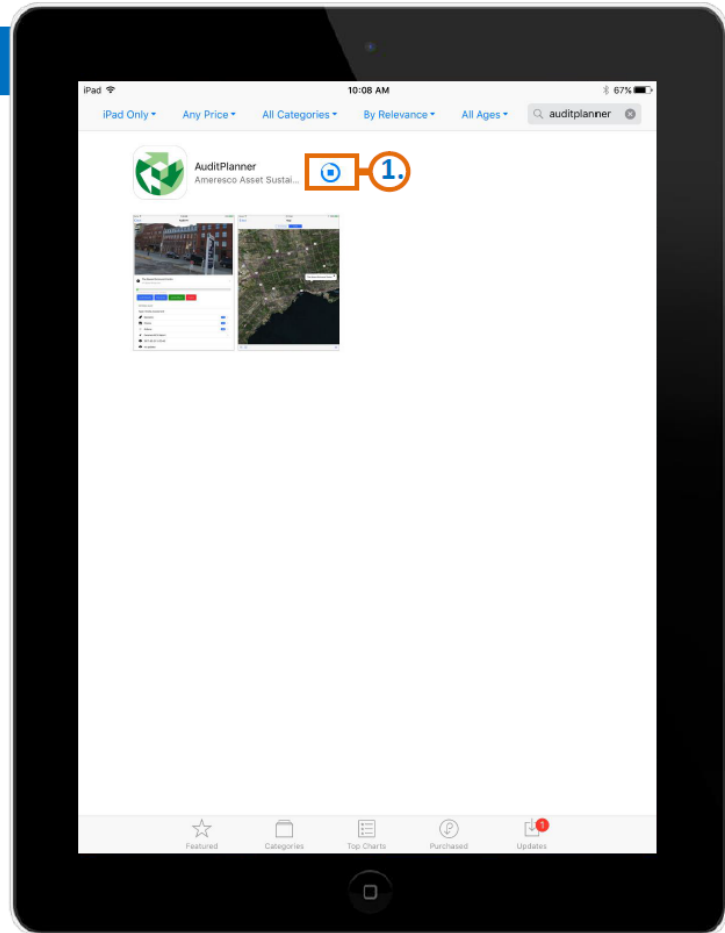
Guide for Installing AuditPlanner

Downloading AuditPlanner

Once you have entered your Apple ID and Password AuditPlanner will begin downloading.

1. After tapping **Get** and then **Install** the download is indicated by a circle with a blue square in the middle.

Note: You'll notice that the circle will start to fill in with a thicker blue line as the download progresses.

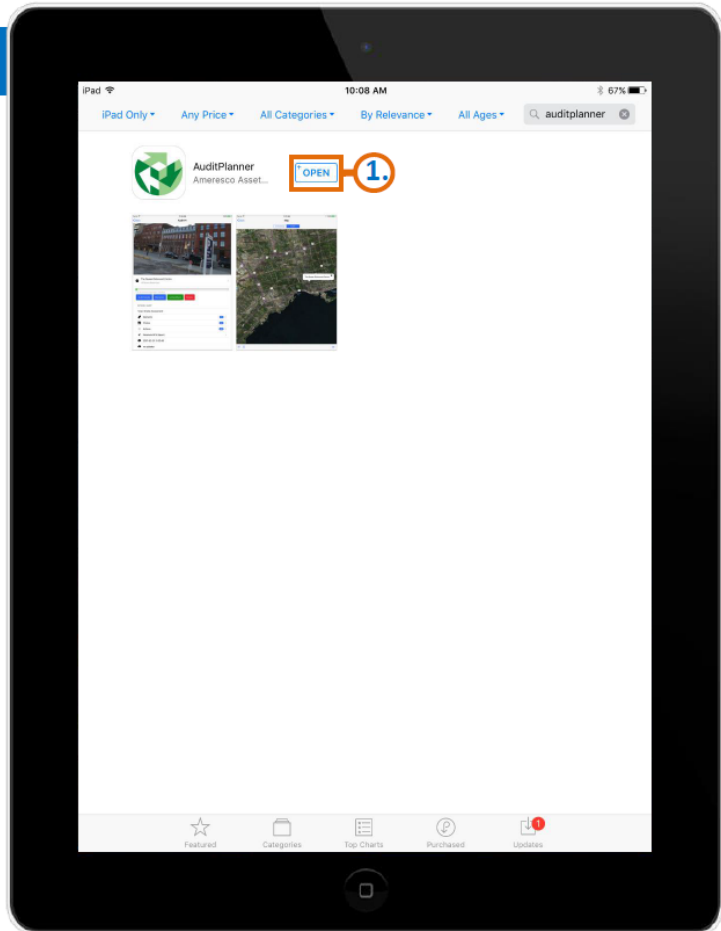


Guide for Installing AuditPlanner

Opening AuditPlanner

1. When the download has fully completed you will see a button labeled “Open” tap on it to open AuditPlanner.

Note: Once you open AuditPlanner you can now login using your Asset Planner credentials.



End of Appendix E: Guide for the installation of AuditPlanner™

Appendix F: Uniformat II for Building Elements (E1557)

ASTM Uniformat II Classification for Building Elements (E1557-97)

Level 1 Major Group Elements	Level 2 Group Elements	Level 3 Individual Elements
A SUBSTRUCTURE	A10 Foundations	A1010 Standard Foundations A1020 Special Foundations A1030 Slab on Grade
	A20 Basement Construction	A2010 Basement Excavation A2020 Basement Walls
B SHELL	B10 Superstructure	B1010 Floor Construction B1020 Roof Construction
	B20 Exterior Enclosure	B2010 Exterior Walls B2020 Exterior Windows B2030 Exterior Doors
	B30 Roofing	B3010 Roof Coverings B3020 Roof Openings
C INTERIORS	C10 Interior Construction	C1010 Partitions C1020 Interior Doors C1030 Fittings
	C20 Stairs	C2010 Stair Construction C2020 Stair Finishes
	C30 Interior Finishes	C3010 Wall Finishes C3020 Floor Finishes C3030 Ceiling Finishes
D SERVICES	D10 Conveying	D1010 Elevators & Lifts D1020 Escalators & Moving Walks D1090 Other Conveying Systems
	D20 Plumbing	D2010 Plumbing Fixtures D2020 Domestic Water Distribution D2030 Sanitary Waste D2040 Rain Water Drainage D2090 Other Plumbing Systems
	D30 HVAC	D3010 Energy Supply D3020 Heat Generating Systems D3030 Cooling Generating Systems D3040 Distribution Systems D3050 Terminal & Package Units D3060 Controls & Instrumentation D3070 Systems Testing & Balancing D3090 Other HVAC Systems & Equipment
	D40 Fire Protection	D4010 Sprinklers D4020 Standpipes D4030 Fire Protection Specialties D4090 Other Fire Protection Systems
	D50 Electrical	D5010 Electrical Service & Distribution D5020 Lighting and Branch Wiring D5030 Communications & Security D5090 Other Electrical Systems
E EQUIPMENT & FURNISHINGS	E10 Equipment	E1010 Commercial Equipment E1020 Institutional Equipment E1030 Vehicular Equipment E1090 Other Equipment
	E20 Furnishings	E2010 Fixed Furnishings E2020 Movable Furnishings
F SPECIAL CONSTRUCTION & DEMOLITION	F10 Special Construction	F1010 Special Structures F1020 Integrated Construction F1030 Special Construction Systems F1040 Special Facilities F1050 Special Controls and Instrumentation
	F20 Selective Building Demolition	F2010 Building Elements Demolition F2020 Hazardous Components Abatement

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Appendix G: Facility Condition Index (FCI)

Facility Condition Index (FCI) is an industry standard asset management tool which measures the “constructed asset’s condition at a specific point in time” (US Federal Real Property Council, 2008). It is a functional indicator resulting from an analysis of different but related operational indicators (such as building repair needs) to obtain an overview of a building’s condition as a numerical value.

It was developed by the US Navy to assess conditions of vessels and strategically prioritize renewal spending. FCI was first utilized as an index for determining building condition in the early 1990s by US National Association of College and Universities and quickly became the standard for post-secondary institutions across North America. Recently condition index measures have been adopted by the US Federal Real Property Council, American Public Works Association, Council of Ontario Universities, Federation of Canadian Municipalities (through their Infraguide publications), Health Authorities, Education Ministries and Social Housing Authorities throughout North America.

FCI is obtained by aggregating the total cost of any needed or outstanding repairs, renewal or upgrade requirements at a building compared to the current replacement value of the building components. It is the ratio of the “repair needs” to replacement value” expressed in percentage terms. Land value is not considered when evaluating FCI.

$$\text{FCI} = \frac{\text{Total of Building Repair/Upgrade/Renewal Needs (\$)}}{\text{Current Replacement Value of Building Components (\$)}}$$

The lower the value of FCI, the better condition that a building is in. Current industry benchmarks indicate the following subjective condition ratings for facilities with various ranges of FCI:

0- 5% FCI	<i>Asset is in <u>good</u> condition</i>
5-10% FCI	<i>Asset is in <u>fair</u> condition</i>
10 – 30% FCI	<i>Asset is in <u>poor</u> condition</i>



For example, a building with a replacement value of \$1,000,000 with outstanding renewal needs of \$90,000 would have an FCI of 9%, indicating the building is in fair condition. FCI can be reported at all levels in the asset hierarchy; it can be used to express component condition (example: elevators), building condition, development condition and portfolio condition, with each higher level being the aggregate of those beneath it in the hierarchy.

While originally developed by the US Navy, FCI was quickly adopted by universities and other public institutions to monitor building condition and employed as a strategic decision-making investment tool. Other organizations in the United States are adopting this tool and are at various stages of implementation. The Kentucky Department of Education is currently using FCI to assist with investment decisions and strategic directions.

FCI Impacts & Risks

Utilizing FCI provides a professional method of measurement to determine the relative condition index of a single building, group of buildings, or if desired, a total portfolio. As FCI increases, the assets will experience:

- Increased risk of component failure
- Increased facility maintenance and operating costs
- Greater negative impacts to building occupants.

Table 1 on the following page illustrates the types of risks and tradeoffs that can be expected when buildings are maintained at different FCI levels.

Table 1: Facility Condition Index Levels and Impact to Component Failure Risk, Students and Staff

Common Implications of FCI to Educational Facilities				
FCI Levels	Impact to Buildings and Components	Examples of Component Issues	Building Occupant Complaints and Morale	Maintenance Staff Impact
Critical (Over 30%)	<ul style="list-style-type: none"> - Facilities will look worn with obvious deterioration. - Equipment failure occurring frequently. Occasional building shut down will likely occur. Management risk is high. - Health and safety issue figure prominently. 	<ul style="list-style-type: none"> - Replacement of multiple systems required (e.g. Mechanical, Electrical, Architectural and Structural - Building heating system failure. - Evacuation of upper floor due to unaddressed roof leakage. - Structural issues including envelope replacement. 	<ul style="list-style-type: none"> - Occupant complaints will be very high with an unmanageable level of frequency. - Lack of maintenance will affect occupant attitudes and morale, and the quality of teaching and learning. 	<ul style="list-style-type: none"> - Staff will not be able to provide regular scheduled maintenance due to high level of “reactive” calls
Poor (11% to 30%)	<ul style="list-style-type: none"> - Facilities will look worn with apparent and increasing deterioration. - Frequent component and equipment failure may occur. Occasional building shut down will occur. 	<ul style="list-style-type: none"> - Replacement of specific major systems required, such as heating and plumbing systems, complete interior renovations, building envelope restoration. - Shut down may affect some units (e.g. roof or pipe leakage) 	<ul style="list-style-type: none"> - Occupant complaints will be high with increased level of frequency. - Concern about negative occupant morale and the quality of teaching and learning will be raised and become evident. 	<ul style="list-style-type: none"> - Facilities staff time will likely be diverted from regular scheduled maintenance and forced to “reactive” mode
Fair (6% to 10%)	<ul style="list-style-type: none"> - Facilities are beginning to show signs of wear - More frequent component and equipment failure will occur. 	<ul style="list-style-type: none"> - Repairs and replacement of specific systems, e.g. boiler, window replacements, interior renovations. 	<ul style="list-style-type: none"> - Occupant complaints will occur with a higher level of frequency - Occupant morale and the quality of teaching and learning may be affected. 	<ul style="list-style-type: none"> - Facilities staff time may at times be diverted from regular scheduled maintenance
Good (0% to 5%)	<ul style="list-style-type: none"> - Facilities will look clean and functional - Limited and manageable component and equipment failure may occur. 	<ul style="list-style-type: none"> - Repairs and replacement of more of an aesthetic or general nature, such as wall painting, carpet replacement, roof repair, window caulking. 	<ul style="list-style-type: none"> - Occupant complaints will be low and manageable - Occupant morale and the quality of teaching and learning will be positive and evident. 	<ul style="list-style-type: none"> - Facilities staff time will be devoted to regular scheduled maintenance.

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