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Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.



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### Course Description

1. Organizations that own, operate, and maintain buildings frequently have the opportunity to move into brand new (or significantly renovated), state-of-the-art buildings. However, the turnover process of moving from the construction phase into the operational phase often tends to create much angst and trepidation among members of the facilities team who will be responsible for maintaining and operating the new building. This doesn't have to be the case if the building turnover process has been well planned and starts early.
2. This webinar is focused on the importance of recognizing, appreciating, and addressing the unique needs of the building's "end users" (e.g., maintenance techs, custodians, access control teams, safety and security teams, building controls techs, etc.) that tend to be overlooked by members of the design and construction teams. This presentation will suggest some ways, with proper planning, the turnover process can actually be exciting such that the future operators, maintainers (and future occupants) can't wait to "get the keys" to the building.
3. The presentation will identify key tasks from selecting the key stakeholders, hiring the additional labor required to operate and maintain the new building, developing and implementing the asset management program, selecting and purchasing the equipment needed to maintain the new building, managing warranties and maintenance agreements, etc.
4. The goal of this webinar is to provide useful information and guidance to help the facilities management organization streamline and optimize the turnover process focusing on the unique needs and challenges of the operational team stakeholders to eliminate (or at least reduce) the stress of moving into a new building that will need to be properly operated and maintained well after design and construction teams have moved on.

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### Learning Objectives

1. Define what the process of "Building Turnover" means and discuss why the building turnover process needs to start as early as the design phase.
2. Identify the very unique needs of the members of the team that will be assigned to operate and maintain the building.
3. Identify all the key stakeholders that should be intimately involved with the planning of the turnover process.
4. Identify the major/critical tasks that should be part of the turnover planning process.
5. Discuss ways an organization could develop a team focused on planning and executing building turnover activities.

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### This concludes The American Institute of Architects Continuing Education Systems Course



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### Contents

1. Setting The Stage
2. What is TOW?
3. KEY Tenets of TOW
4. TOW Topics
5. Closing Comments
6. Q & A



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PRESENTER



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- Facilities management professional since 1981
- Extensive experience in facilities management, and energy management
- Has served higher education, healthcare, and investor-owned utilities



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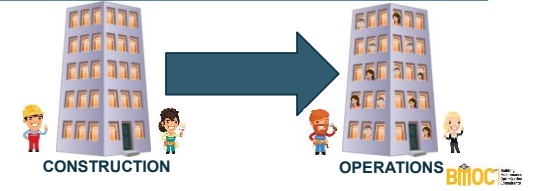
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DEFINITION OF THE BUILDING TURNOVER PROCESS

The planned and orderly process of holistically preparing a newly constructed building (or major renovation), the building operations team, and the building's future occupants for the eventual occupation and operation of the new building. (Lit's Definition)



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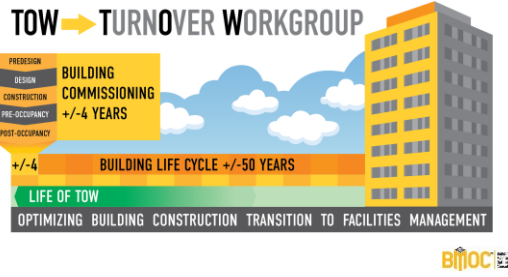
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The turnover process **MUST** be led by a key member representing the **OPERATIONS** team.

- ✓ It SHOULD NOT be delegated to a member of the project team.
- ✓ TOW is not the responsibility of the Design/Construction team.

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# What Is TOW?

- 1. Stands for "Turn Over Workgroup."
- 2. It is a process that focuses on getting the operational stakeholders ready and excited to take the "keys" to the building upon substantial completion so they can start maintaining and operating the building effectively from Day 1!

- 1. Stands for "Turn Over Workgroup."
- 2. It is a process that focuses on getting the operational stakeholders ready and excited to take the "keys" to the building upon substantial completion so they can start maintaining and operating the building effectively from Day 1!
- 3. **A primary goal is to encourage transparency and create a sense of a strong cooperative partnership between the design/construction team and the operational stakeholders.**



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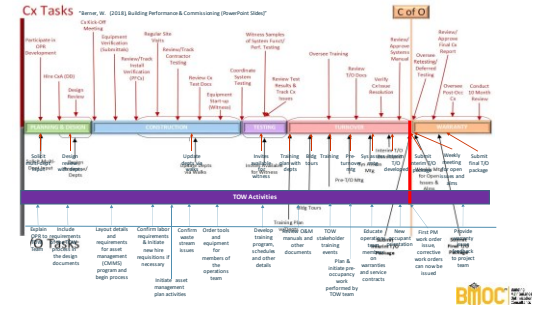
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# Key Tenets of TOW



- 1. TOW should be led by a key member representing the OPERATIONS team.**
  - ✓ It SHOULD NOT be delegated to a member of the project team.
  - ✓ TOW is not the responsibility of the Design/Construction team.
- 2. TOW should start early during the design phase.**
- 3. TOW IS NOT intended to add "load" to the Project Management team:**
  - ✓ The PM's role in TOW is primarily communication between the operational stakeholders and the project team and vice versa for the TOW leader.
  - ✓ The intention is to reduce the PM's "load" by delegating much of the turnover planning work to the operational stakeholders.
  - ✓ One primary goal is to "prevent" problems and issues from occurring which takes FAR more time to react to then to prevent them from occurring in the first place.



- 4. TOW IS NOT duplicative of the regular project meetings.**
  - ✓ It is focused on planning for the eventual operations phase.
  - ✓ It is a series of meetings and activities focused on the needs of the **OPERATIONS** team managed by **OPERATIONS** team stakeholders.
- 5. Hold Participants Accountable:**
  - ✓ Laser Focus: **Who** (by name) is going to do **what** (specific deliverable) by **when** (specific date).
- 6. "Management" Support is Essential:**
  - ✓ Difficult to implement the program and sustain it without management support.



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**7. Documentation:**

- ✓ Recording detailed notes of meetings and distributing to TOW members within 48 hours of each meeting.

**8. Focus on Preventing "Issues":**

- ✓ Always looking "two to three moves ahead!"
- ✓ The focus is always PROACTIVE, not REACTIVE!
- ✓ Anticipating "issues" early and dealing with them early!

**9. Have the "right" stakeholders engaged at the "right" time**

- ✓ Confirm we have the **right** stakeholders with the **right** information participating at the **right** time so we can make the **right** decisions!



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**10. Update the design standards.**

- ✓ The design standards need to be "in sync" with the TOW process.

**11. TOW should be led by a key member representing the OPERATIONS team (repeated for emphasis).**

- ✓ It SHOULD NOT be delegated to a member of the project team.
- ✓ TOW is not the responsibility of the Design/Construction team.

**12. Involve TOW early.**

- ✓ When does a project hit the "TOW radar screen?"



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**TOW Membership**

Building Operations & Maintenance	Custodial	Construction Manager
Fire Protection & Fire Alarm	Building Controls	Key and Access Services
Landscape Services	Environmental Compliance	Environmental Health & Safety
Work Control	Utilities Generation & Distribution	Energy Management
IT Services	The "Customer"	TOW Coordinator
FF&E Coordinator	Project Manager	Space Management
Parking	Security	Waste and Recycling
TOW Coordinator	Sustainability	Asset Management



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### List of TOW Potential Discussion Topics

TOW Opening Statement	Existing FM Operations Personnel	New Hires
Project Walk-Throughs	Custodial	Asset Management Program
FM Operations Team Training	New Occupant Orientation	New Tools & Equipment
Warranty Management & Service Contracts	Attic Stock Management	Safety
Waste Stream Management	Waste	Recycling
Landscaping	Access Control	Design Review
Water Treatment	"Value Engineering" Exercises	Pre-Turnover Partial Building Occupation
Building Automation System	Operational Stakeholder Contractor-Provided Training	Post-Occupation Periodic Reviews
Security/Public Safety		



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### 1. Mandatory Agenda Item #1

- ✓ Stakeholders are reminded that they are expected to bring up issues through their unit structure for issues that cannot be satisfactorily addressed through the project channels.
- ✓ It is critical that a clear path is maintained for elevating and resolving the inevitable conflicts relating to the interests of the operational stakeholders.
- ✓ State clearly and often that all members of the TOW team have the right and responsibility to elevate to management any issue they do not feel is being resolved at the project level.



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**2. Mandatory Agenda Item #2**

- ✓ Date of Substantial Completion
- ✓ Date of Final Occupancy
- ✓ Look Ahead - Key Milestones
- ✓ Potential for Partial Occupancy

The schedule should never be a mystery to the operational stakeholders!

# TOW Discussion Topics

**1. Project Inception Information Sharing:**

- ✓ When will the operational stakeholders be informed of the early details of the project?
- ✓ What information will be shared?
  - ✦ Type of building
  - ✦ Function of the building
  - ✦ Departments housed in the building
  - ✦ Size of building
  - ✦ Overall project schedule and budget
- ✓ Unique features
- ✓ What certifications will be sought (e.g., Green Globes, LEED, etc.) and how will the selection of certain building features to meet the certification requirements impact "operations?"



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**2. Design Reviews:**

- ✓ Make sure everyone is on the same page!
- ✓ When will the design reviews start?
- ✓ Who will be participating in the design reviews?
- ✓ How will the design reviews be conducted?
- ✓ How much time will be allotted for design reviews?
- ✓ What expectations does the PM have of the design reviewers?
- ✓ What expectations do the design reviewers have of the PM?
- ✓ Are design reviews mandatory for selected individuals?
- ✓ How will the design reviewers receive feedback regarding their comments?



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**3. Delineation of Departmental Responsibilities:**

- ✓ Confirm the services the various university "support" departments will be provided by which departments and at what cost.
- ✓ Which department-owned equipment will be maintained by FM and other departments?
- ✓ Will service level agreements or MOUs need to be negotiated?
- ✓ Have these discussions early!
- ✓ Remember – no surprises.



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**4. Existing FM Operations Personnel:**

- ✓ Who (by name) is going to be involved in the operations of the building?
- ✓ Get them involved early in TOW.
- ✓ Do the existing personnel have the necessary experience to operate and maintain the new systems?

**5. NEW FM Operations Personnel (New Hires):**

- ✓ Custodial? Maintenance techs?
- ✓ Have the new positions been budgeted?
- ✓ When do they need to be on board?
- ✓ Who is going to be responsible for preparing the new hire requisitions AND preparing the new hire?
- ✓ Will outside contractors be used to maintain the new building?



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**6. Project Walk-Throughs:**

- ✓ What is the purpose of the PWTs?
- ✓ Are there "different" PWTs for the various stakeholders?
- ✓ Who will participate in the PWTs and will the be mandatory?
- ✓ When do they start?
- ✓ The TOW team should confirm with the PMs when PWTs should be scheduled.
- ✓ What is the frequency of the PWTs?
- ✓ How will issued identified during PWTs be documented and how with the "loop be closed?" Need to define the process when an issue is identified during the walkthrough. Need to confirm the feedback loop.
- ✓ Expectations:
  - ❖ What are the PM's expectations of the participants?
  - ❖ What are the participant's expectations of the PWTs and the PMs?



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**7. Custodial/Waste/Recycling:**

- ✓ Containers - Will they fit inside the new millwork?
- ✓ Who will be responsible for purchasing the containers?
- ✓ Which budget will pay for the containers?
- ✓ Confirm cleaning procedures of flooring and other finishes (like windows).
- ✓ Are specialized cleaning solutions required?
- ✓ Will specialized custodial tools and equipment be needed?
- ✓ Where will the exterior dumpsters be located and how big do the need to be?
- ✓ Order long lead time custodial equipment.
- ✓ Confirm where equipment will be stored "pre-turnover."
- ✓ Confirm who will be responsible for the "final" preoccupancy cleaning.
- ✓ Roll-around chairs – will the wheels leave marks on the floor?
- ✓ Confirm waste pickup schedule with new occupants.



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**8. Asset Management Program Development:**

- ✓ Facilities Management, NQT the project team, needs to own this process!
- ✓ Confirm who will be responsible for this effort and who will performing the individual tasks. Will any of this work need to be outsourced?
- ✓ Start this discussion early in the design phase.
- ✓ Goals:
  - ❖ First equipment PMs come out the day the building is turned over!
  - ❖ All work performed in support of the building assets is documented via work order starting the day the building is turned over.
- ✓ Plan to complete a **physical** inventory and tagging exercise of the assets. Don't rely on asset lists provided by the contractors.
- ✓ Make sure the asset nomenclature is consistent with the rest of the campus buildings



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**8. Asset Management Program Development (cont'd):**

- ✓ Make sure an effective preventive maintenance program is developed for the new assets.
- ✓ Capture and select the "right" operations and manuals and associate them with the specific assets in the CMMS.
- ✓ Upload all info into the CMMS prior to building turnover.
- ✓ This process CANNOT be delegated to the building commissioning team.
- ✓ Need to make sure any assets that are removed during a project are noted as "inactive" in the CMMS.



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**9. Operational Stakeholder Team Training:**

- ✓ High quality training will be required by the project's contractors.
- ✓ Attendance will be mandatory.
- ✓ What systems will which members of the FM team be trained on?
- ✓ Ask the contractor to create a training session syllabus for your review and approval well before the date of the session.
- ✓ Ask the contractor to provide the credentials of the trainer for your approval.
- ✓ Provide acceptable specific training windows, e.g.:
  - ✓ Tuesdays, Wednesdays, Thursdays between the hours of 9:00A & 11:30A, and 1:00P & 3:00P
- ✓ A prior notice of a minimum of two weeks is required.
- ✓ Will the training sessions be recorded?
- ✓ Where will the training take place?



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**10. New Occupant Orientation:**

- ✓ Review the location of area thermostats, identify which thermostats serve which areas and show the occupants how to control them.
- ✓ Review the operation of all automatic lighting control systems.
- ✓ Review the operation of controls that will automatically operate window shades based on ambient light levels.
- ✓ Review the location of fire extinguishers.
- ✓ Review the location of and proper use of eye wash stations, emergency showers, fire alarm pull stations, etc.
- ✓ Review the location of automatic defibrillators and first aid kits.
- ✓ Provide training on AV systems and other technologies the new occupants will be using.



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**10. New Occupant Orientation (cont'd):**

- ✓ Review the proper waste handling and disposal procedures.
- ✓ Review the locations and proper operation of unique building characteristics (e.g., lab gas isolation valves).
- ✓ Review emergency egress routes.

**11. New Tools & Equipment:**

- ✓ What do we need?
- ✓ Who is going to be responsible for selecting the equipment?
- ✓ Who is going to be responsible for soliciting proposals from vendors?
- ✓ Whose budget will fund the purchase?
- ✓ When will the equipment be needed?
- ✓ When does the equipment need to be ordered?
- ✓ Where will this equipment to be stored when it arrives?



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**12. Warranty Management/Service Contracts:**

- ✓ Documentation:
  - Where is it going to be located?
  - Who is going to manage it?
- ✓ Avoid the "I'm not going to touch that equipment because it is under warranty" syndrome.
- ✓ When does the warranty period start and when does it end?
- ✓ Is the warranty start/end date different for certain systems that were in "useful" service before the date of final completion?
- ✓ How will warranty items addressed - what is the chain of communications?
- ✓ Are any assets covered by service contracts?
- ✓ What are the requirements of the service contracts?
- ✓ Who is going to inform the key members of the operations team?
- ✓ Embed warranty information in the CMMS.



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**13. Attic Stock Management:**

- ✓ What do we want and in what quantities?
- ✓ Where are we going to put it?
- ✓ When is it going to be delivered?
- ✓ Who will receive, store, and document what was delivered?

**14. Safety:**

- ✓ Arc flash study and labeling
- ✓ Lockout/tagout procedures
- ✓ Eyewash stations/safety showers
- ✓ Defined confined spaces and procedures
- ✓ Safety data sheets
- ✓ Roof tie-offs



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**15. Waste Stream Management:**

- ✓ Different waste streams:
  - ✦ Recycling
  - ✦ Landfill
  - ✦ Composting (what about flies and gnats?)
  - ✦ Hazardous materials
  - ✦ Biohazards
  - ✦ Special waste
  - ✦ Batteries
  - ✦ Electronics
- ✓ Confirm locations of dumpsters.
- ✓ Confirm frequency of pickup.
- ✓ Identify selected routes through the building to get the dumpsters.



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**16. "Value Engineering (VE) Exercises"**

- ✓ An effective VE process is needed for full transparency.
- ✓ Who is going to participate in the VE exercises?
- ✓ How will the operational stakeholders provide feedback?
- ✓ How will the operational stakeholders be notified of the "final" decisions?
  - ✦ Why were the specific changes were made?
  - ✦ Why recommendations from the document reviewers not incorporated?
- ✓ Will the operational stakeholders have the opportunity to "protest" the final decisions?



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**17. Emergency Back Up Power Systems:**

- ✓ Does everyone understand the extent of the emergency power system?
- ✓ Do the occupants understand what happens during the scheduled emergency power tests especially if the tests include switching of power from Normal Power to Emergency Power and back?



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**18. Contractor-Provided Documents:**

- ✓ Confirm, within the design documents, specifically what project documents MUST be turned over to the OWNER at the end of the project. Is the contract language sufficient to "encourage" the contractor to provide the turnover documents on a timely basis?
- ✓ Develop an official "Project Closeout Document Checklist" identifying each document (or types of documents) that must be included in the turnover package.
- ✓ Identify which documents are most beneficial to the operational stakeholders.
- ✓ Define the O&M manual review and approval process. Allow stakeholders to review O&M manuals as they are submitted.
- ✓ Define the submittal review and approval process. Who will be reviewing and approving the submittals?



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**19. Phased Occupancy:**

- ✓ Will occupancy of the building be phased prior to Substantial Completion?
- ✓ What are the implications for the operational stakeholders of operating and maintaining that portion of the building BEFORE the building has been completed?



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**21. Other Topics:**

- ✓ Access control
- ✓ Building automation system
- ✓ Fire protection
- ✓ IT
- ✓ Final landscaping activities
- ✓ AV equipment
- ✓ Appropriate "equipment" located in "equipment" rooms by the new occupants
- ✓ Water treatment
- ✓ Campus utility issues
- ✓ Maintaining equipment that was started early



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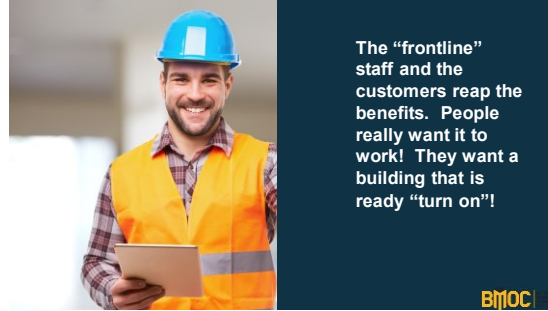
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**1. Begin the project with the "end in mind:"**

- ✓ Turnover over a building that is fully operational with the support of the entire operating staff who are fully prepared to "happily" take the keys for a 50+year building life.

**2. The turnover process belongs to the operations team!**

- ✓ Don't delegate it to the project team.
- ✓ The project team SUPPORTS the turnover process.

**3. Don't manage the turnover process simply by adding "words" to the design documents.**

- ✓ The "words" are there to educate the design/construction team to know what to expect as the process is led by the operations team.
- ✓ Don't delegate it to the project team.



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**4. Start planning for building turnover early in the design phase.**

**5. Get buy-in from FM leadership!**

**6. "Commissioning" the building is only a component of a holistic turnover process.**

- ✓ "Commissioning" and "Building Turnover" are not synonymous.

**7. Counter the argument that "we don't have time dedicate resources to this effort!"**



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"All these tasks will be performed along the way, in the absence of "TOW," albeit in an uncoordinated, haphazard, reactive and stressful fashion."



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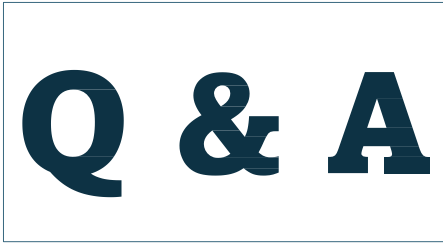
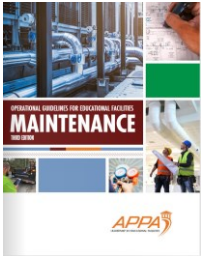
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