A Guide to Sustainable AV Design and Installation

Published by the SAVe Committee on Sustainable AV Design and Installation

SAVe
Sustainability in AV

Sustainable AV Design Best Practices

In a world where sustainability has become a prevalent need, the audiovisual industry has an important role in promoting environmentally responsible practices. This guide, created by the SAVe Committee on Sustainable Design & Installation, is intended to encourage technology integrators to adopt best practices that advance sustainability, including:

- The selection of brands committed to sustainability
- The creative reuse of existing equipment
- Design focused on energy efficiency.
- The implementation of multifunctional equipment that reduces the need for multiple devices
- Advanced technologies that minimize the use of redundant cables and components

With an eye on waste reduction, we will also explore strategies for cleaner installations and configuring systems for automatic shutdown, without forgetting the importance of preventative maintenance to extend the life of equipment.

This document not only seeks to be a consultation tool, but also a step forward toward achieving the U.N. Sustainable Development Goal No. 12, which focuses on responsible consumption and production. By providing detailed and accessible information, this guide can be a valuable resource for any professional in this sector and thus advance efforts to achieve sustainability for our industry, communities, people and planet.

The Importance of Sustainability – and a Blueprint to Achieve It

When we talk about sustainability, what do we mean? In 1987, the United Nations Brundtland Commission defined sustainability as “meeting the needs of the present without compromising the ability of future generations to meet their own needs.”

The Sustainable Development Goals (SDGs) were adopted by all 193 United Nations member states in September 2015 as part of the 2030 Agenda for Sustainable Development, which laid out a 15-year plan to achieve the SDGs and their related targets. The 17 goals are interconnected, apply to all countries, and need to be carried out by all stakeholders – including the private sector.

The Impact of Goal 12

The AV industry has a responsibility to advance all 17 SDGs, but we can make the greatest impact by focusing on Goal 12, which focuses on ensuring sustainable consumption and production patterns. By adhering to sustainable practices in AV design and installation, we can make significant progress toward this end.

As consultants, designers, engineers, manufacturers, distributors, integrators and end users, it is incumbent on us to ensure sustainable consumption and production patterns at every stage of the product lifestyle.

Sustainability Considerations for AV Integrators

It's essential to focus on the AV solution life cycle. For AV integrators, our responsibility begins with the products we choose and the solutions we design and it extends to reuse, repurposing, recycling and responsible disposal of AV gear that has reached the end of its useful life.

Choose Brands That Are Committed to Sustainability

End users typically look to AV integrators to choose the products that go into their solutions. Consequently, integrators have a responsibility to choose wisely. That means considering sustainability when specifying products. Are they manufactured with sustainably sourced materials in energy-efficient facilities? Are products shipped in environmentally sound packaging? Are they designed to be upgraded and easily repaired, or is planned obsolescence the manufacturer's intention?

Take the time to research products from the standpoint of sustainability. Here are some ways to evaluate a manufacturer's commitment to sustainability:

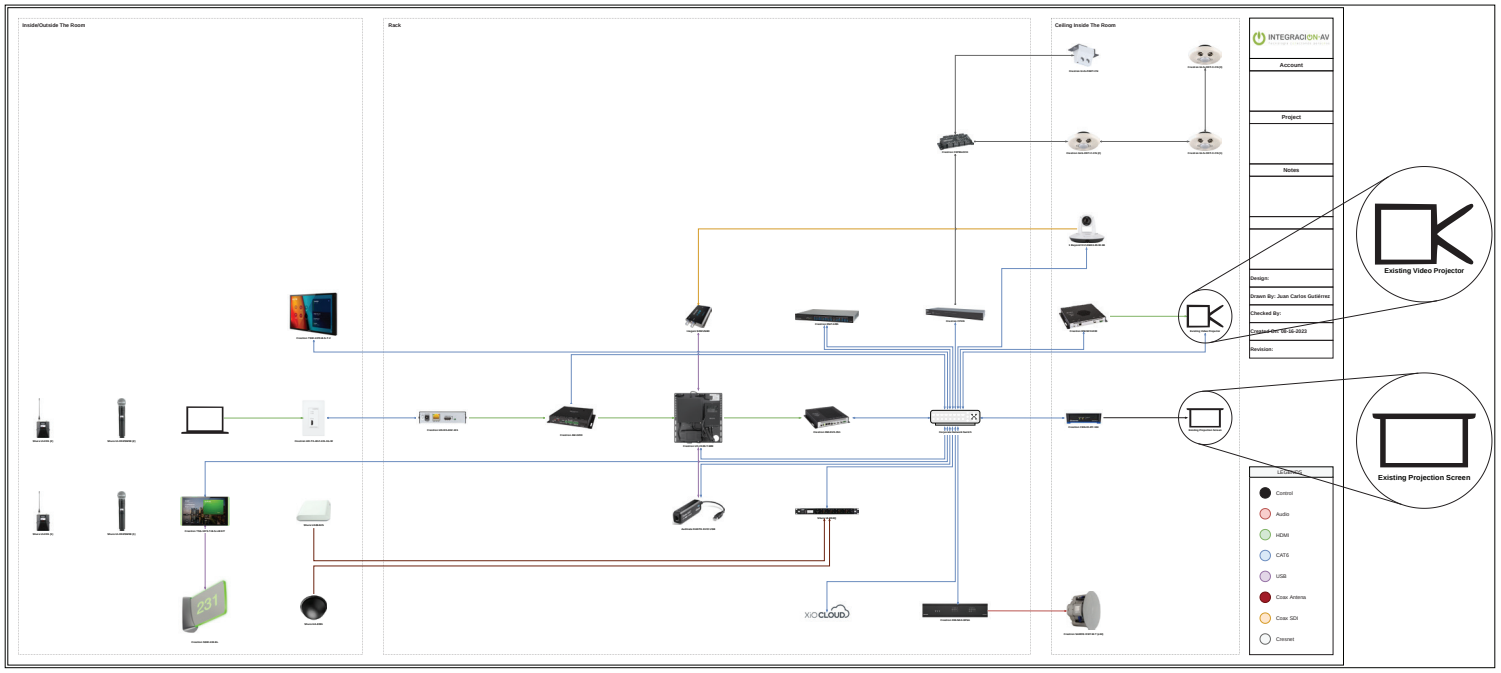
- Look for recognized third-party certifications and standards that cover the environmental impact of a manufacturer's products as well as energy efficiency and supply chain practices. Some important ones are TCO Certified, Energy Star, and EPEAT (Electronic Product Environmental Assessment Tool).
- See if a company provides detailed information about their supply chain, including the sourcing of raw materials, labor practices and environmental impacts.
- Look for detailed and accessible sustainability reports. The more open a company is about its suppliers, production processes and sourcing practices, the greater confidence you can have in its sustainability practices.
- When looking at a manufacturer's sustainability reports, look for measurable and time-bound targets.
- Look for companies that are committed to circular economy principles by designing products that can be repaired, reused and recycled.
- Look for take-back programs, repair services or warranties that advance product longevity.
- Evaluate whether the manufacturer uses renewable materials and clean energy in production.
- Look for audits or certifications related to labor standards, like SA8000 or Fair Labor Association (FLA) certification.
- Check to see if the manufacturer participates in community or environmental projects that indicate commitment beyond merely compliance.
- See if the manufacturer provides carbon footprint data or participates in emissions-reduction programs.
- Watch out for vague claims like "eco-friendly" without substantiation.
- Investigate third-party reviews, NGO reports, or media coverage to see if there are credible reports on a company's practices.
- Look for robust corporate Social Responsibility (CSR) Programs.

Often, you will find detailed sustainability information on a manufacturer's website. But if you have additional questions, you should not hesitate to contact suppliers directly and ask specific questions related to sustainability.

Reuse of Existing Equipment

When tasked with upgrading or replacing a client's AV infrastructure, look for opportunities to reuse existing equipment. Not every element of a solution will need to be replaced. By retaining useable equipment, you will keep it out of the waste stream (while saving the client money and enhancing your reputation for being a responsible steward of their dollars).

The illustration shown here is an example of a design that incorporates useable equipment from the existing integration.



Courtesy of Integración AV

Take Note of Energy Consumption

Many considerations go into equipment selection. Energy consumption should be one of them. You'll find that parity products often differ significantly in the amount of energy they use.

DEVICE	BRAND 1	BRAND 2	BRAND 3
All-in-one video conferencing bar	22 watts (20 RMS watts per channel)	45 watts (20 watts per channel)	60 watts
Video projector (7000 lumens, laser phosphor, 20,000 hours lamp life)	448 watts	435 watts	540 watts
Audio amplifier	1.800 watts	1.800 watts	2.000 watts
Control processor	9.7 watts	8.8 watts	10 watts
PTZ camera with auto tracking	15 watts	18 watts	30 watts

Courtesy of Integración AV

Products That Help to Reduce Power Consumption of Other Equipment

SHADES OR CURTAINS

Many AV solutions require an effective HVAC system for proper functioning. The use of window shades or curtains can significantly decrease the strain on HVAC. Moreover, building sensors can automatically operate the shades so that you realize their benefits on a consistent basis.

Crestron Shades

Products That Help to Reduce Power Consumption of Other Equipment

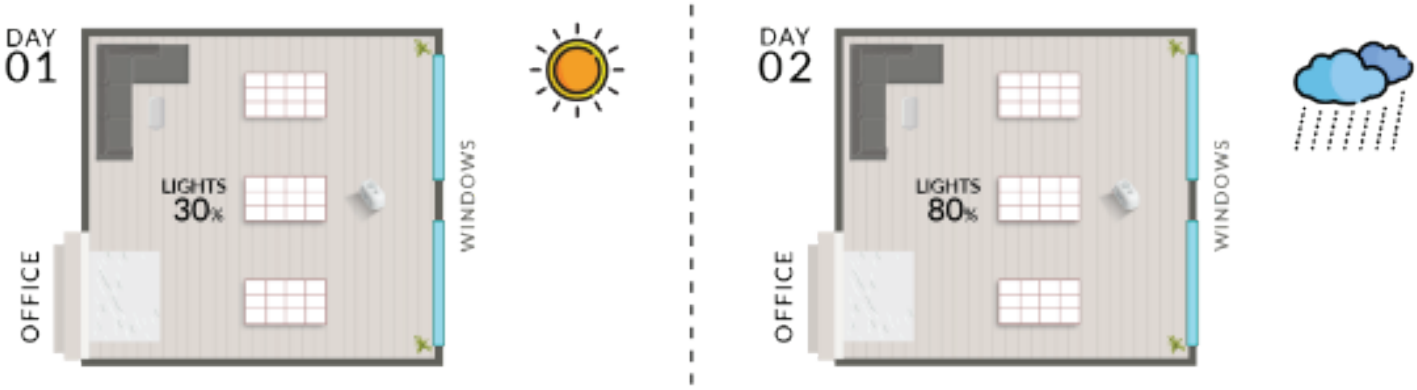
LIQUID CERAMIC-BASED PAINT

The devices in a rack room typically generate a considerable amount of heat. Consequently, it's essential to have an effective HVAC system to maintain a safe operating temperature. The use of a liquid ceramic-based paint can provide significant thermal insulation which will enable you to maintain optimal room temperature without running the HVAC system at full capacity.

Products That Help to Reduce Power Consumption of Other Equipment

DAYLIGHT HARVESTING TECHNOLOGY

Traditionally, interior lighting provides a fixed level of illumination regardless of how much light comes in through the windows. The use of lighting sensors and dimmers can adjust the intensity of artificial lighting in relation to natural lighting so that your lights work only as hard as they need to.



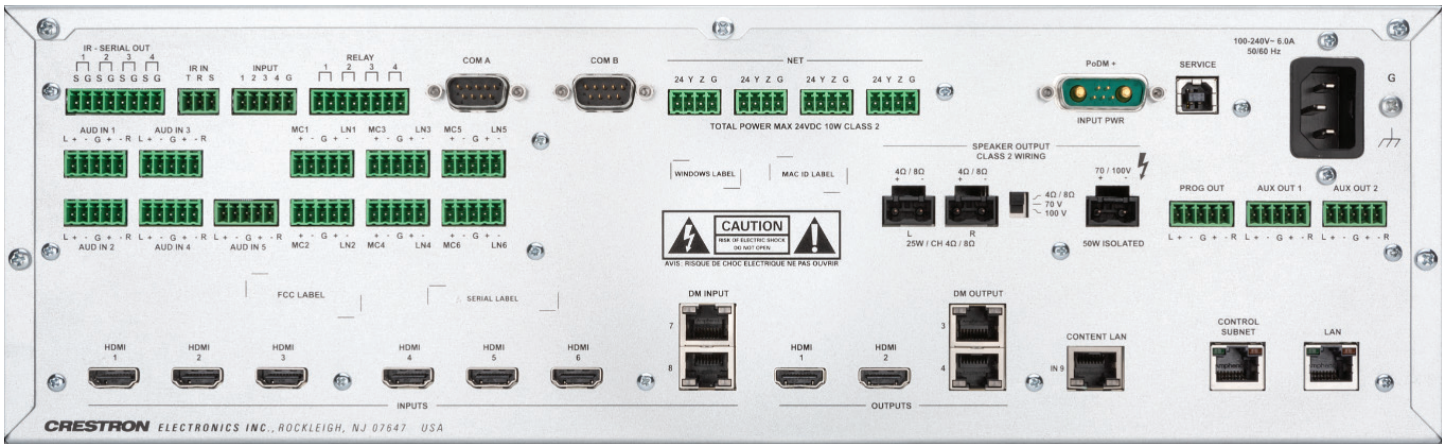
Crestron Daylight Harvesting

Daylight Harvesting. Use of lighting sensors to adjust the intensity of the luminaires.

Conserve Power with All-In-One Components

If an all-in-one component can replace several separate components, it's likely that overall power consumption will go down. The following illustration shows an all-in-one device that uses 93 watts vs. a list of separate components with a total power consumption of 218 watts.

ALL-IN-ONE COMPONENT



Crestron DMPS Switcher

POWER CONSUMPTION: 93 WATTS TYPICAL

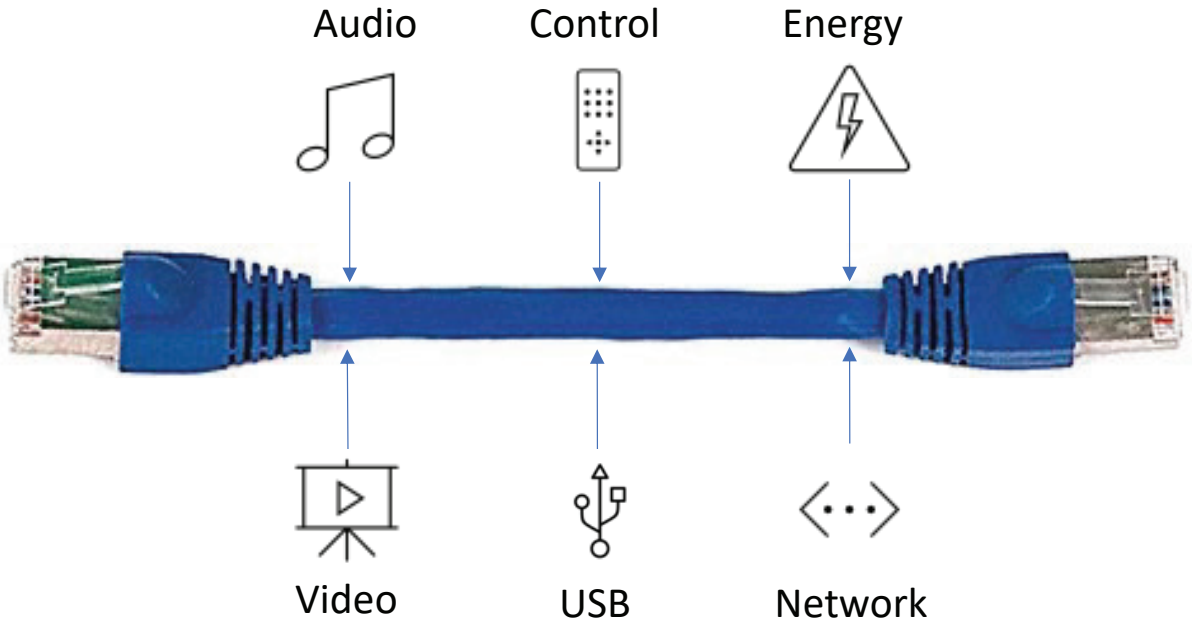
SEPARATE COMPONENTS

- 25 watts per channel audio amplifier (14.6 watts)
- 24-in, 3-out audio console (50 watts)
- Video matrix with 8 inputs, 4 outputs and one streaming (32 watts).
- Control processor (Automation) (7 Watts)
- 2 HDBaseT transmitters (36 watts)
- 2 HDBaseT receivers (36 watts)
- 8 audio detachers (42.4 watts)
- Total power consumption: 218 Watts

Incorporate Technologies & Protocols That Reduce Installation Materials

Integrators can choose among an array of technologies and protocols that enable the transmission of various kinds of information over a single cable.

- HDBaseT (High-Definition Baseband Transmission)
  - *Includes UHD video, digital audio, DC power, ethernet, USB 2.0, control*
- SDVoE (Software Defined Video over Ethernet)
- AVB (Audio Video Bridging)
- AV over IP (Audio-Visual over Internet Protocol)
- Dante (Digital Audio Network Through Ethernet)
- AES67 (Audio Engineering Society)
- MADI (Multichannel Audio Digital Interface)
- NDI (Network Divide Interface)
- PoE (Power over Ethernet)

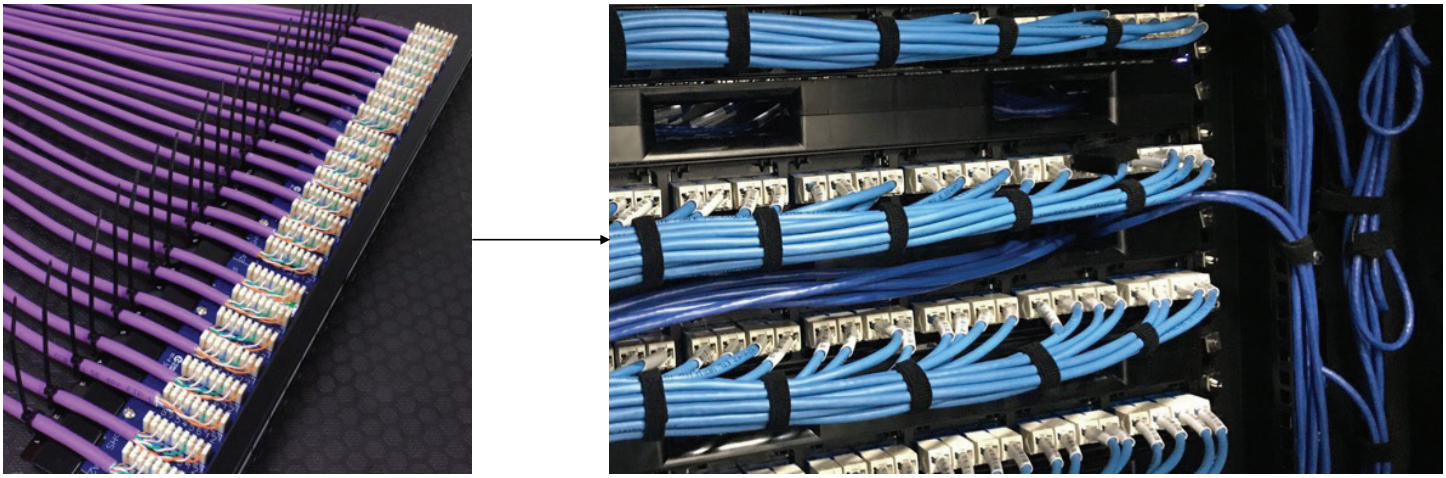


Dante AES67/MAD164/NDI

Minimize Waste In Installation

REDUCE PLASTIC USE

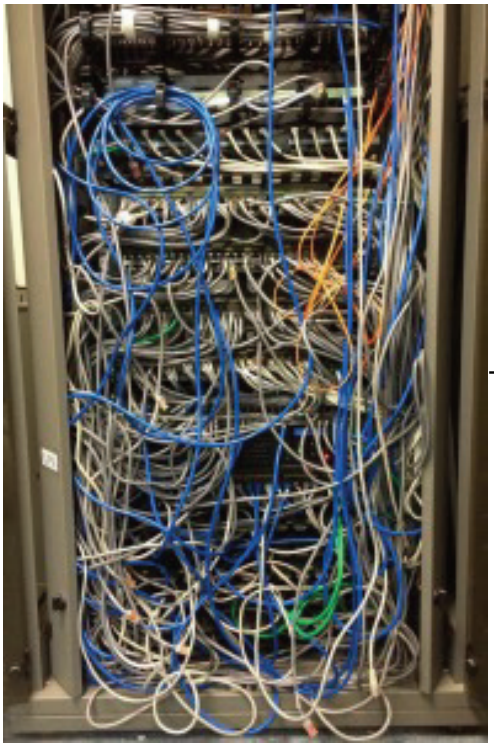
Opportunities abound to reduce the use of plastic, which can sit in landfill sites for hundreds of years without breaking down. One strategy to eliminate plastic use is to replace densely placed nylon tie-downs with reuseable velcro straps (which have the added benefit of easy adjustment of tension to reduce the chance of cable malfunction).

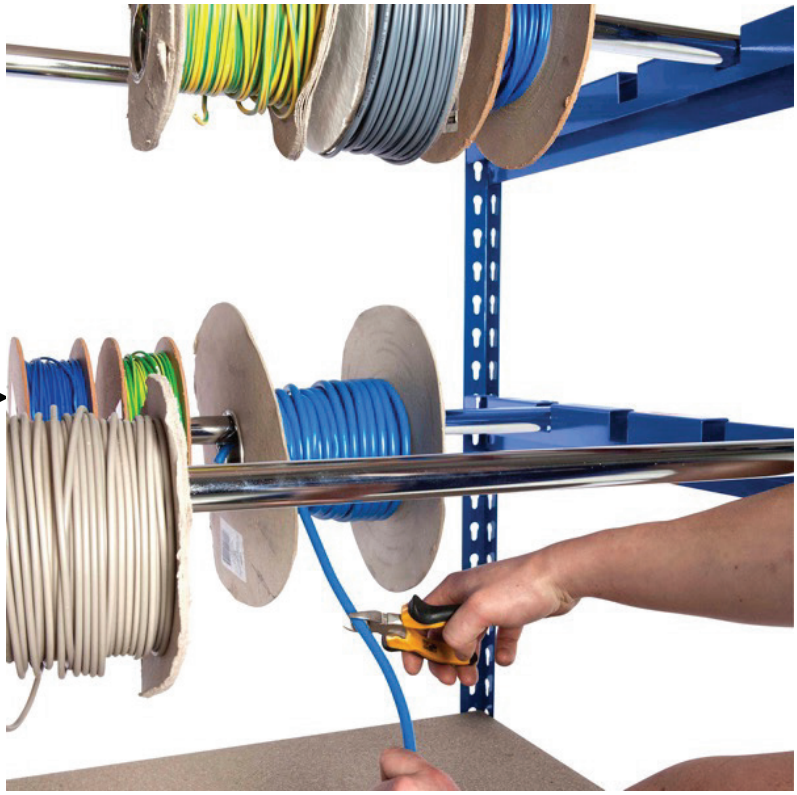


Minimize Waste In Installation

INSTALL LESS WIRING

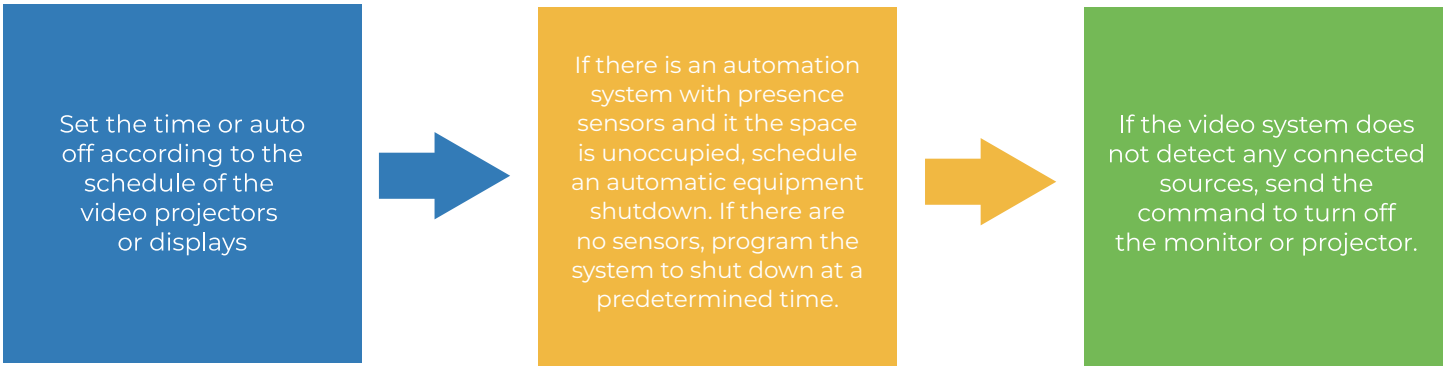
Often installation is performed without a clear idea of room and design specifications. Not knowing precisely where equipment will be placed, integrators may leave several meters of extra cable in order to meet the possible need for greater length. Good design upfront enables you to use only as much cable as you need.





Use Configuration and Scheduling Tools to Save Energy

AV equipment can consume significant amounts of power when it's not being used. To save energy, use configuration and scheduling automation tools that can turn equipment off according to a predetermined schedule, when room sensors indicate that a room is empty, or when no signal is detected.



Practice Preventative Maintenance

Sustainable AV solutions incorporate preventative maintenance protocols. Among the benefits of proper and thorough maintenance:

- Control over equipment status
- Extending the useful life of equipment
- Breakdown prevention
- Saving time and money in the long run
- Reducing the risk of component or system failures

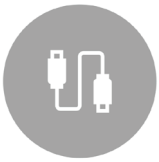
Use Checklists to Ensure Sustainability Practices Are Followed

The modern world has given us stupendous know-how. Yet avoidable failures continue to plague us in almost every realm of organized activity. And the reason is simple: The volume and complexity of knowledge today has exceeded our ability as individuals to properly deliver it to people – consistently, correctly and safely. Check lists make possible some of the most difficult things people do, from flying airplanes and building skyscrapers to designing AV integrations that meaningfully advance sustainability.

Are all the lights in all the spaces required to be on all the time?

Are we contributing to sustainability goals?

Can some devices be set for lower brightness levels without affecting the use of the space?



Can wired systems be used instead of wireless?

Do all scheduling screens need to be active for today's bookings?

Is it necessary to turn on all devices in the system under all operating circumstances?

Can some devices be turned off between sessions instead of left on or in standby mode?

Can the space be safely lit using lower levels when not in use?

Can the air conditioning of the space be regulated at a more economical level without causing inconvenience?

About SAVe

An independent, 501(c)3 non-profit organization, Sustainability in AV (SAVe) is the first industrywide U.S.-based organization to bring global stakeholders in the audio visual (AV) field together to take concerted action to achieve the 2030 Sustainable Development Goals (SDGs).

SAVe's Sustainable AV Design and Installation Committee provides resources and guidance to industry members who seek to meet their clients' needs while minimizing the environmental footprint of their installations. **Contact SAVe** for more information about our work, and to inquire about ways you can advance our mission as a volunteer, sponsor, or donor.