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PREPARED BY:

Sustainable Production Alliance

Introduction

The Sustainable Production Alliance (SPA) is proactively working to reduce the environmental impacts of physical production. **SPA's goal is to provide industry insights into high impact areas and encourage stakeholders to take action to accelerate systemic, operational change.** As part of this mission, SPA has engaged industry stakeholders on sustainability issues including clean energy and circular material use. In March 2021, SPA published the report **Carbon Emissions from Film and Television Productions**, which found that at least 25% of average tentpole film emissions and nearly 50% of 1/2-hour multi-camera series emissions are from utilities. As the entertainment industry **continues its sustainability efforts**, owners and operators of soundstage facilities are key stakeholders and allies in reducing production emissions.

To understand where production facilities are in their progress toward sustainability, SPA distributed a survey to soundstage facility owners around the world. From June to October 2021, respondents representing over 50 facilities provided information about **clean power availability**, **HVAC systems**, **energy efficiency**, **production services**, and **overall sustainability** efforts. Many respondents shared projects currently underway to develop more sustainable energy practices that will result in reduced emissions and waste. They also shared key challenges and questions about prioritizing and implementing sustainable best practices. This report summarizes the key takeaways from the survey and highlight practices that facilities should prioritize to close the gap and reduce their environmental impacts.

All results have been aggregated and anonymized, and the intention of this report is to identify current practices and priorities for the near future. SPA would like to thank the facility owners who responded and provided information for this report and who are working hard to integrate sustainability best practices in their operations.

Key Survey Metrics:

- 50 facilities in 9 different countries, representing 37 cities globally completed the survey.
- LED lighting has a high rate of adoption across facilities and production services.
- Recycling is widely available, 2.5 times more often than composting.
- Clean energy rentals represent a growth opportunity for on-site production services
- Fewer than half of facilities measure their carbon footprint
- Renewable energy is procured at most facilities, but almost all continue to rely on natural gas for heating.

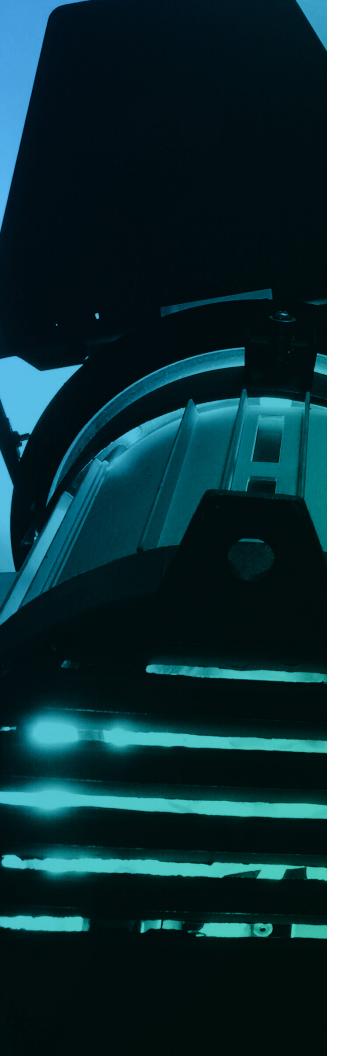


Table of Contents

01

Overview: Adoption Rate of Sustainable Practices

02

Clean Energy & Power

04

HVAC Systems

06

LED Lighting

80

Clean Energy Rentals

10

Material Reuse

12

Waste Management

14

Carbon Emissions

16

Conclusion: Looking Ahead

18

Appendix: Survey Questions

Overview: Adoption Rate of Sustainable Practices

The intent of the soundstage facility survey was to gather information on current sustainability best practices and inform key opportunities. SPA found that **more than half of the time, soundstage facilities have low adoption rates of sustainability best practices**. Specifically, 60% of the time facilities have "Low" or "Moderate" adoption, compared to 8% at the "Expected" adoption rate.

Methods

Out of 39 survey questions, 27 indicated whether sustainability practices had been adopted by the facility. For each of those questions, responses were aggregated, and questions were categorized based on the number of "expected" answers for sustainability practice adoption. Questions with fewer than 40% of "yes" responses to current sustainable practices were considered

"Low" adoption, and questions with more than 80% of "yes" responses were considered "Expected" adoption." The adoption rate shows the percentage of instances facilities responded "yes". Note that this analysis does not include responses related to waste management services provided by facilities, since only 42% of respondents provide these services (see Material Reuse subsection).

Sustainability Practices Adoption Rates

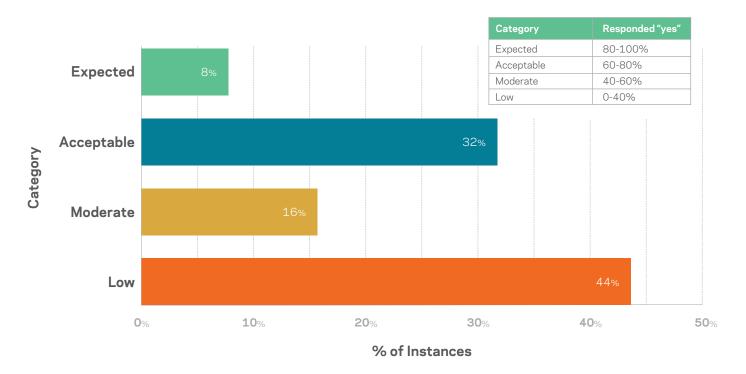


Figure: 44% of the time, respondent answers indicated a "Low" adoption rate. Only 8% of the time did answers meet the "Expected" adoption rate of sustainability practices.

Clean Energy & Power

As the world shifts to clean power, soundstage facilities are vital partners because through utilities and equipment rentals, they provide productions with most of their power resources. According to survey respondents, 14% have existing on-site clean power projects, while others have plans to develop projects. In addition, 62% of respondents access clean energy through a utility supplier. It is recommended that facilities have a goal to provide productions sufficient clean, renewable energy through on-site generation or utilities.

Benefits of Investing in Clean Energy

- **Cost Savings** Investing in renewable energy production on-site will result in reduced utility fees in the future.
- **Energy Autonomy** On-site energy production allows facilities to be in control of their energy and more resilient to changes in the global energy market.
- **Added Value** Production studios are increasingly looking for facilities and rentals that help them cut emissions and save costs.

- **Up-Front Costs** Installation costs vary depending on regional availability. Rebates may be applicable in some regions.
- **Regional Application** Some renewable energy projects will be more suited to certain locations over others. Obtaining assessments from regional providers is recommended.
- **Grid Power Sources** Some power grids are cleaner than others. If the local grid uses fossil fuels, it is recommended that facilities prioritize transitioning to renewable energy.

Renewable Energy

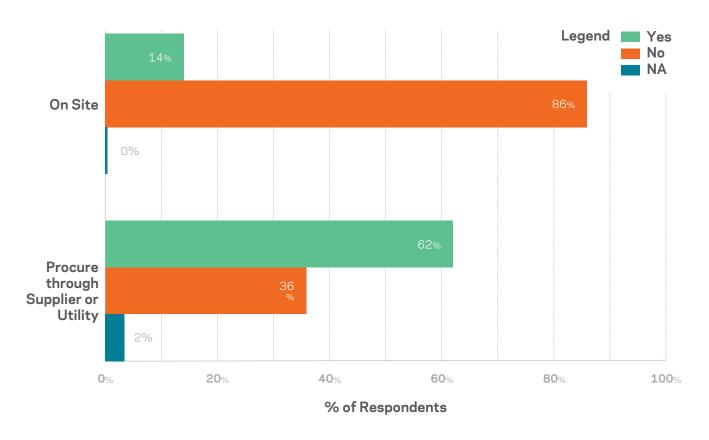


Figure: 14% of respondents produce renewable energy on site, and 62% of respondents procure renewable energy through an electrical grid supplier or utility.

- Ensure facility energy is sufficient for all production needs in both soundstages and the
 backlot and that power drops are available to productions, preventing the need for
 fossil fuel generators while shooting at the facility.
- Provide ample charging stations for electric and plug-in hybrid vehicles.
- Obtain 100% renewable energy by producing clean energy on-site and/or through utility suppliers. Some public grids are cleaner than others, so on-site projects and renewable energy utilities are best. More information on renewable energy can be found here.

HVAC Systems

Heating, ventilation, and air conditioning (HVAC) systems are often a major power draw for soundstage facilities and productions. **According to survey respondents, 82% of their facilities use natural gas heating**, which contributes significantly to greenhouse gas emissions. Facilities should transition away from natural gas toward electricity provided by clean, renewable sources, as outlined in the **Clean Energy & Power** section of this report.

Benefits of Electrifying HVAC

- **Cost Savings** Electric heat pumps are more energy efficient than traditional HVAC systems, resulting in cost savings.
- Improved Work Conditions In-house HVAC systems reduce productions' reliance on supplemental units, which are often large, noisy, and leaky.
- **Emissions Reduction** Eliminating natural gas reduces the facility's environmental impact and reduces the cost of carbon offsets.

- **Up-Front Costs** Installation costs vary depending on regional availability. Facilities should explore local options and rebate opportunities.
- Installation Time Facilities may need to shift operations as they upgrade HVAC systems.
- **Asset Recovery** Natural gas heating systems remain an asset for the facility, so options to recover the cost of that initial investment should be explored.

Heating Source



Figure: 82% of respondents use natural gas for heating, 4% use electricity, 10% use a combination and/or some renewables, and 4% do not provide heating.

- Ensure that productions do not have to rely on supplemental HVAC units at soundstages. These units are often noisy and inefficient, so replacing them with clean energy solutions will improve health and safety, energy efficiency and emissions reduction outcomes.
- Replace natural gas heaters with electric heat systems. An energy efficient alternative is the electric heat pump. Heat pump technology has advanced to be effective at heating and cooling in many climates, making them available in many regions.

LED Lighting

As technology continues to improve and prices drop, LED lights are quickly becoming the lighting standard for productions, and typically use at least 75% less energy than traditional incandescent lighting. According to survey respondents, 64% have upgraded stage lighting to LED, and 48% have upgraded office lighting to LED. These responses do not indicate whether all infrastructural lighting has been upgraded to LED in each area, so facilities should continue to complete LED lighting upgrades.

Benefits of Upgrading to LED Lights

- Cost Savings LED lights consume less energy, making them a quick win for cost savings and reduced environmental impacts.
- Improved Work Conditions LED lights are versatile, emit almost no heat, and turn on instantly, which improves productivity.
- **International Alignment** Globally, cities are upgrading their facilities to utilize LED lights, so it is recommended that soundstage facilities do the same across their operations.

- Installation Time For large facilities, it can take time and personnel and/or contractual costs to upgrade all lighting.
- **Scheduling** Stage house lights are best to be changed out in between productions, as set builds will inhibit access.

LED Lighting Upgrades

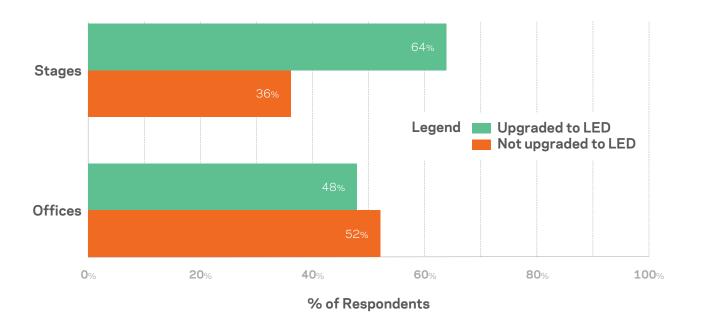


Figure: 64% of respondents have upgraded stage lighting to LED, and 48% have upgraded office lighting to LED.

- **Upgrade all soundstage and office lighting to LED.** LED lights are energy efficient and provide a multitude of benefits.
- Explore other energy efficiency options, such as installing HVAC sensors, motion-sensing lighting, and energy efficient equipment rentals.



Clean Energy Rentals

Soundstage facilities have an opportunity to provide clean, low-emission, and energy efficient rentals, which includes provision and use of renewable diesel, mobile battery power sources, solar panels, and LED lighting.

Renewable Diesel (also known as hydrotreated vegetable oil or HVO)

Considering that diesel generators and trucks utilized by productions are still widely rented, renewable diesel (RD) provides an opportunity to continue using this equipment while reducing emissions. RD is a drop-in fuel for petroleum diesel that causes about 70% fewer lifecycle greenhouse gas emissions because it comes from renewable feedstocks, including vegetable- and animal-based oils. Only 66% of survey respondents allow RD in rental equipment. Currently, RD availability and cost varies by region, but facilities can request RD from their fuel suppliers. (See SPA's letter of support for RD.) Even with RD, there are carbon and particulate emissions, so it is recommended that diesel equipment is Tier 3 or higher to meet emissions and air quality standards. For more information on RD, read the SPA's one-pager here.

Cleantech Rentals

Clean energy requires technological innovation, placing responsibility on equipment suppliers and developers to accelerate cleantech solutions and increase the availability of alternative power sources. Examples of such solutions include mobile batteries, solar panel chargers and fuel-efficient fleets, such as electric and hybrid rental vehicles. According to respondents, 42% of facilities currently rent out mobile batteries, and 2% rent out solar panels. These equipment types are preferable to diesel generators because they eliminate on-site emissions and provide a more efficient continuous power source for productions when on location. Soundstage facilities can accelerate production and uptake of cleantech by creating partnerships with equipment suppliers to build demand.

Benefits of Renting Cleantech

- Improved Work Conditions Cleaner fuel and alternative power sources result in fewer emissions. Mobile batteries and solar panels also cause less noise, which is useful when productions shoot in sensitive locations.
- **Increased Opportunities** Globally, emerging tech and renewable fuels are becoming more prominent. Adopting these resources means taking full advantage of clean alternatives.

- Up-Front Costs Clean power solutions sometimes come at a premium cost, but there may be opportunity to negotiate with suppliers.
- Emerging Tech The clean power technology space is fast-paced and changing rapidly. Facilities can provide a market demand to increase availability and thus lower costs.

Clean Energy Rentals

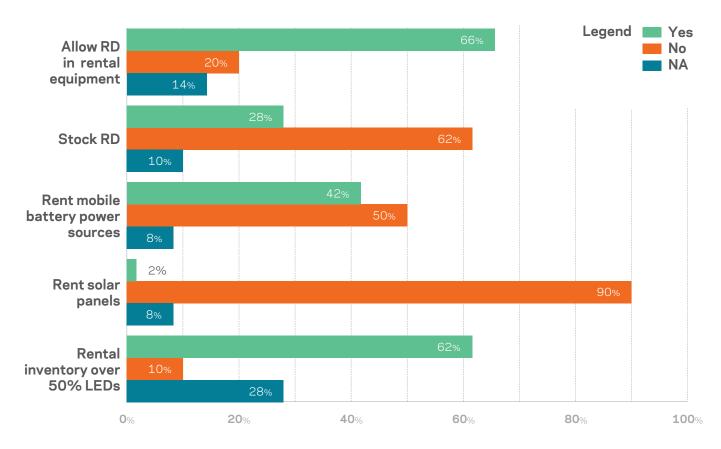


Figure: 28% stock renewable diesel (RD), while 66% allow RD in their rental equipment. 42% rent mobile battery power sources, but only 2% rent solar panels. 62% have a rental inventory with over 50% LEDs.

- Enforce a "no idling" policy at all production locations and facilities. Idling wastes fuel and money and causes harmful emissions.
- Increase clean energy rental equipment. Options include mobile battery stations, solar power chargers and electric vehicles.
- Ensure LED lights comprise over 50% of lighting rentals. See the LED Lighting section for more information on the benefits of LED lighting.
- Obtain renewable diesel (RD) and encourage productions to use it. RD is a drop-in fuel for equipment and vehicles that reduces lifecycle emissions by about 70%, compared to fossil fuels.
- **Upgrade fleets to improve fuel efficiency.** Generators should be Tier 3 or higher if they are not electric, and vehicles should be increasingly electric or hybrid.

Material Reuse

Material reuse and food donation are key sustainable actions that the entertainment industry can undertake to reduce environmental impacts, support local communities and shift toward a circular economy. In March 2021, the Screen New Deal reported an average of 47,000 tons of total waste per tentpole film production. According to survey respondents, only 26% provide studio-managed material reuse programs, and 38% provide food donation programs for productions. Soundstage facilities should prioritize shifting to circularity by connecting productions with resources and local opportunities to reuse set materials and donate food.

Benefits of Supporting Material Reuse

- **Support Local Communities** Connecting with community partners is an important opportunity for facilities to give back.
- **Quick Win** Providing a refrigerator for food donations or a corner for material storage is a quick win for facilities.
- **Added Value -** Productions and studios are looking for facilities that provide studio-managed programs for food donations and material reuse.

- Access to Donations Food donation refrigerators must be accessible to both productions and food rescue agencies.
- Developing Partnerships For facilities that cannot create space for material reuse, developing local material reuse partnerships and connecting them with productions is an opportunity to engage in both social and economic development.

Facility Managed Donation & Reuse

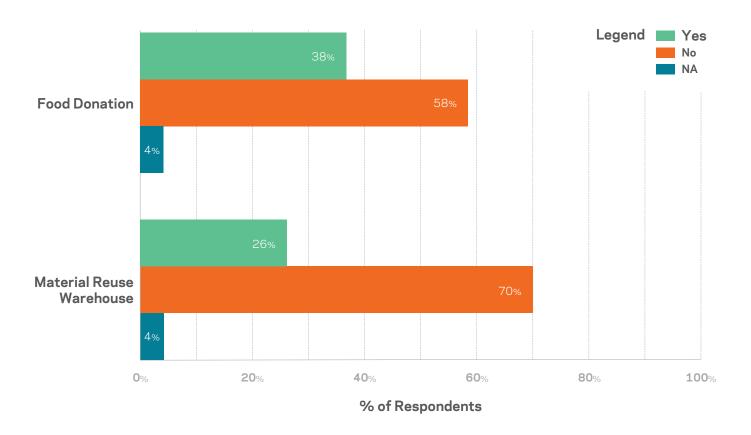


Figure: 38% of respondents offer a studio-managed food donation program to productions, and 26% provide a material reuse program and/or warehouse.

- Provide a refrigerator and/or freezer for food donations, and connect productions to local food rescue agencies. A list of potential organizations can be found in the Green Production Guide vendor resource. Laws encourage food donations in the US, Canada, and many other countries.
- Provide a material reuse storage and/or donation area and connect productions to local material reuse opportunities. Large warehouses are not necessary. With quick turnarounds in the production, high volumes of material can rapidly move through small storage spaces.

Waste Management

For materials that cannot be reused or recovered, facilities should provide or recommend sustainable options for waste management services. Although at least 65% of respondents with facility-managed waste systems provide recycling services, only up to 38% provide composting. When organic waste breaks down in landfill, it releases the greenhouse gas methane, which is 22% more effective at trapping heat than carbon dioxide. Therefore, facilities should prioritize providing or connecting productions with composting services.

Benefits of Refining Waste Services

- **Cost Savings** Many governments are implementing incentives for entities to divert organic waste from landfills.
- **Improved Work Conditions** Properly streamlined waste can be managed more effectively, which saves time and reduces odors.
- **Added Value** As many facilities already have recycling programs, adding a composting service would create value for production services.

- On-Site Composting Facilities should explore investing in on-site composting systems, such as biodigesters.
- **Regional Differences** The types and costs of composting services vary by region. Facilities should explore and implement the best available options.

Facility Provided Waste Management Services

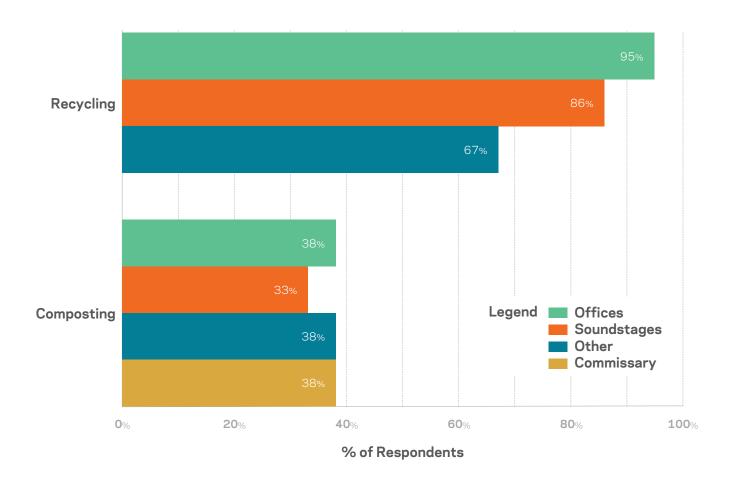


Figure: 42% of respondents indicated that studios are responsible for some waste management services. Of these respondents, 67-95% provide recycling, but only 33-38% provide composting.

- Provide or connect productions with waste management services that capture and compost all organic waste, and recycle construction, metal, and hazardous waste.
- Ensure that waste diversion and/or composition reports are provided to productions. Data collection is key for production sustainability reporting.

Carbon Emissions

As the world works to become 'net zero' by 2050, it is important for soundstage facilities to begin tracking and reporting carbon emissions to understand their impact, and explore purchasing certified carbon offsets for their unavoidable emissions. According to survey respondents, currently 42% of facilities track emissions, and 8% purchase carbon offsets. By tracking and offsetting emissions, facilities can ensure they support efforts to avoid the worst effects of global climate change.

Benefits of Tracking Emissions

- **Effective Management -** Tracking and reporting carbon emissions is critical for facilities to reduce overall emissions.
- **Industry Alignment -** Many major production studios are already tracking emissions and purchasing offsets to achieve net zero emissions.
- Added Value Facilities that track and report emissions and offsets purchasing signal to the industry and the world at large that they are valuable production partners.

- Up-Front Costs Tracking and reporting emissions requires time and cooperation. Facilities may choose to hire external services to audit their emissions tracking processes.
- **Progressive Reductions** Though purchasing carbon offsets initially increases costs, they will decrease as facilities reduce emissions by implementing efficient, clean technology.

Carbon Tracking & Offsetting

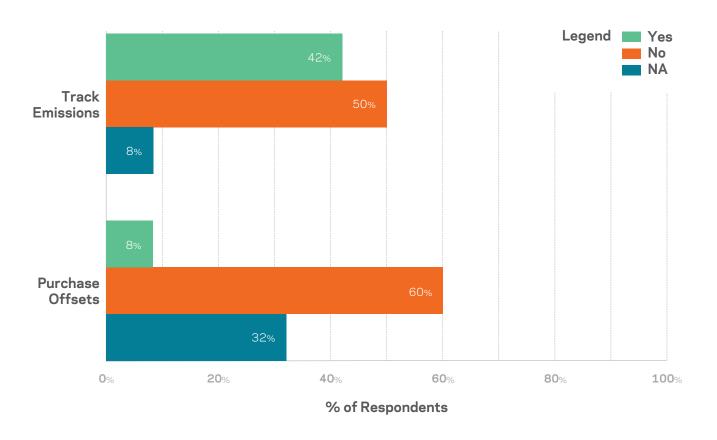


Figure: 42% of respondents track and report the facility's carbon emissions in whole or in part. Only 8% of respondents purchase carbon offsets. The respondents that purchase carbon offsets indicated that they support Verified Carbon Standard (VCS) certified projects.

- Track and report greenhouse gas emissions. This will help facilities understand their impacts and align with standards like the Greenhouse Gas Protocol.
- Purchase carbon offsets for currently unavoidable emissions. Certified offsets (such as Verified Carbon Standard) are rated per metric ton of carbon equivalent greenhouse gases.

Conclusion: Looking Ahead

Soundstage facilities are essential for the film and television industry to become sustainable and for countries to collectively attain greenhouse gas reduction targets. By engaging with facilities, SPA's goal is to provide key insights into high impact areas and mobilize stakeholders to take even greater action to accelerate systemic, operational change, particularly that which addresses clean energy and lower-emissions fuels.

To support sustainable production practices, SPA and the PGA Green committee developed the **Green Production Guide**, which includes resources to help the film and television industry plan, communicate, implement, and track sustainable production practices. The resources, which are free to use and can be downloaded on GreenProductionGuide.com, include:

- Infographics that offer a visual guide to review sustainable best practices in the office, on location, and on stage.
- <u>Tips, memos, and signage</u> to communicate sustainability, as well as fact sheets on renewable diesel, clean energy and other pressing topics.
- Resources to help donate excess food or set materials in support of the local community.
- A <u>vendor database</u> to help find local companies that offer sustainable products and services for production.

The Sustainable Production Alliance (SPA) is a consortium of the world's leading film, television and streaming companies dedicated to advancing sustainability initiatives through advocacy, education, and innovation while reducing the entertainment industry's overall environmental impact. In addition to its commitment to publish industry findings every two years, SPA will continue to explore and develop solutions to reduce the environmental impact in film and television productions.

SPA member companies include Amazon Studios, Amblin Partners, The Walt Disney Company, Fox Corporation, Hasbro, Inc., NBCUniversal, Netflix, Paramount Global, Participant, Sony Pictures Entertainment and Warner Bros. Discovery.

For More Information, visit www.sustainableproductionalliance.com

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Facility Priorities Checklist

Soundstage facility owners and operators play a critical role in reducing the environmental impacts of production. SPA asks all facilities to prioritize the following actions. For further actions, see the Studio Sustainability Standard.

Immediate Action	Near-term Goals
Clean Energy & Power	
 Obtain 100% renewable energy by producing it on site and/or through utility suppliers. Ensure there is sufficient power in studio and backlot areas, so productions do not require generators for power. 	 Produce clean energy on site. Provide ample charging stations for electric and plug-in hybrid vehicles.
HVAC Systems	
□ Install sensors to turn off HVAC systems when stage doors are open.	 Shift all natural gas heating sources to electricity from renewable energy sources.
 Ensure that productions do not have to rely on supplemental HVAC units at soundstages. 	
LED Lighting	
□ Upgrade all soundstage and office lighting to LED.	 Explore other energy efficiency options, such as installing HVAC sensors, motion-sensing lighting, and energy efficient equipment rentals.
Clean Energy Rentals	
☐ Enforce a "no idling" policy at all production locations and facilities.	☐ Increase clean energy rental equipment available to productions
Procure mobile battery units (electric generators) that can be used	(i.e., electric fleets, portable battery packs, solar charging).
in place of fossil fuel generators.	 Ensure LED lights comprise over 50% of lighting rentals.
Obtain renewable diesel (RD) and encourage productions to use it.	
 If renting fossil fuel generators, ensure that 100% of the fleet is Tier 3 or higher for cleaner air and better fuel efficiency. 	
Material Reuse	
 Provide a refrigerator and/or freezer for food donations and connect productions to local food rescue agencies. 	 Connect productions with circular economy practices through all facility equipment and supply rentals.
 Provide a material reuse storage and/or donation area, and connect productions to local material reuse opportunities. 	
Waste Management	
 Provide or connect productions with waste management services that effectively capture and compost all organic waste. 	Explore on-site composting options, such as biodigesters.
 Provide or connect productions with services that recycle construction, metal, and hazardous waste. 	
 Ensure that diversion and/or composition reports are provided to productions. 	
Carbon Emissions	
☐ Track and report greenhouse gas emissions.	☐ Track and report on all emissions every year to communicate progress.
□ Purchase certified carbon offsets for currently unavoidable emissions.	

Find vendors, memos, fact sheets, infographics, and signage on the Green Production Guide.

Appendix: Survey Questions

The survey question below were issued to facility owners and are the basis for this report. Voluntary questions requesting further details specific to each facility are excluded.

Energy & Power

- 1 Do you generate renewable energy on-site? (Yes/No) *
- 2 Have you procured renewable energy through your electrical grid supplier/utility? (Yes/No)*
- 3 Do you have adequate grid or "house" power available at all of your soundstages? (i.e., productions do not need to bring generators to supplement power) (Yes/No)*
- 4 Do you have adequate auxiliary power available at each soundstage at the facility? (Basecamp, Unit Base, Catering, etc.)? (Yes/No)
- 5 Do you have adequate grid power available at all of your backlot areas and parking/pads? (i.e., productions do not need to bring in generators to supplement power) (Yes/No) *
- 6 Do you provide sub-metered electricity consumption data to productions? (Yes/No)*

HVAC Systems

- 7 Is heating available on your soundstages? (Yes/No)
- 8 What is the fuel source of your heating system? (Natural Gas / Electric / Other / No Heating)*
- 9 Do you provide soundstage heating consumption data at the production-level? (Yes/No)*
- 10 Is supplemental heating needed for any soundstages? (Yes/No)
- 11 Is cooling available on your soundstages? (Yes/No)
- 12 If yes, how is cooling supplied? (Central / Package / Supplemental)

Energy Efficiency

- 13 Have you upgraded the lighting in your stages to be LED? (Yes/No) *
- 14 Have you upgraded the lighting in your offices to be LED? (Yes/No) *
- 15 Do you have sensors to turn off HVAC when your stage doors are open? (Yes/No) *

Production Services

Clean Energy Equipment

- 16 How many electric vehicle (EV) charging stations are available to production? (Open Answer) *
- 17 Do you rent EV or hybrid vehicles, including shuttles, golf carts, trucks, forklifts, and other equipment? (Yes/No)*
- 18 What percentage of your generator fleet is minimum Tier 3? (Open Answer) *
- 19 If you have fueling, do you stock renewable diesel (RD)? (Yes/No) *
- 20 Are you permitted for above-ground fuel storage tanks? (Yes/No)
- 21 Do you allow RD in your rental fleet and equipment? (Yes/No) *
- 22 Do you rent mobile battery power sources (alternatives to traditional generators)? (Yes/No)*
- 23 Do you rent solar panels for charging equipment? (Yes/No) *
- 24 Are water lines available in offices? (Yes/No) *
- 25 Are water lines available in soundstages? (Yes/No) *
- 26 Generally, what percentage of your set lighting rental inventory is LED? (Open Answer) *

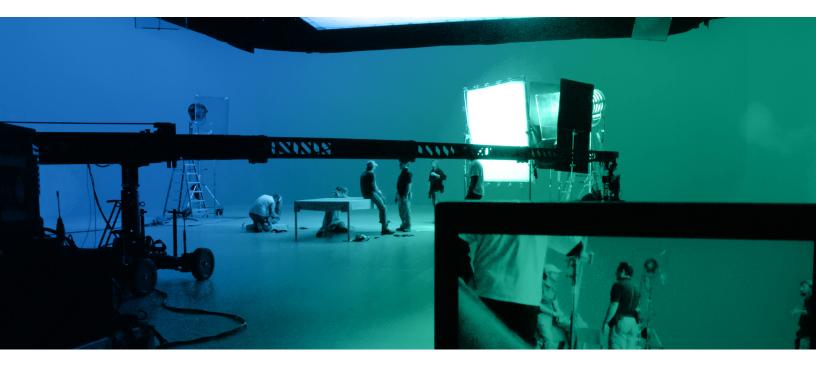
Material Reuse

27 Does your studio provide waste management for production (stage, office, or other locations such as commissary) or is the production responsible? (please describe) (Open Answer)

- 28 If studio managed, do you have separate streams for
 - a. recycling in offices (Yes/No)
 - **b.** recycling in soundstages (Yes/No)
 - c. recycling in other locations (Yes/No)
 - d. composting in offices (Yes/No)
 - e. composting in soundstages (Yes/No)
 - f. composting in the commissary (Yes/No)
 - g. composting in other locations (Yes/No)
 - h. construction & demolition (C&D) recycling (Yes/No)
 - j. metal recycling Yes/No
- 29 Who is your waste hauler(s)? (Open Answer)
- 30 Does your waste hauler accept:
 - a. Co-mingled recycling (Yes/No)
 - **b.** Single stream recycling (Yes/No)
- **31** Do you provide waste, recycling, compost bins to production?
 - a. in offices (Yes/No)
 - **b.** in soundstages (Yes/No)
- **32** Are there any additional fees for renting or servicing the bins? (Yes / No)
- 33 If waste management is studio managed, do you provide waste diversion data to the production?
 - a. Production specific data (Yes/No)
 - **b.** Waste stream specific data (Yes/No)
- **34** What types of material do you accept per waste stream? (Open Ended)
- 35 Do you have a studio managed food donation program available to productions? (Yes/No)*
- 36 Do you have a donation warehouse or office supply reuse center on the lot? (Yes/No)*

Studio Sustainability

- **37** Please describe how you provide productions with sustainability information upon start-up. (Welcome packet, at meetings, through facility rep, or other) *
- 38 Do you track and report this facility's carbon emissions? (Yes/No) *
- 39 Do you purchase carbon offsets? (Yes/No) *



^{*} Indicates question was used to indicate adoption rates of sustainable practices by facilities.

