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# Carbon Emissions of Film and Television Production

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PREPARED BY:

**Sustainable Production Alliance**



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# Introduction

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Climate change is the most pressing global issue facing us today. The film, television and streaming content industry has long recognized this, and the Sustainable Production Alliance (SPA) has worked for more than 10 years to tackle its ever-present threats.

SPA understands that to address any problem, its industry's impacts must first be measured. Specifically, we must take full account of our production's carbon footprints in order to identify practical ways to address our significant effects.

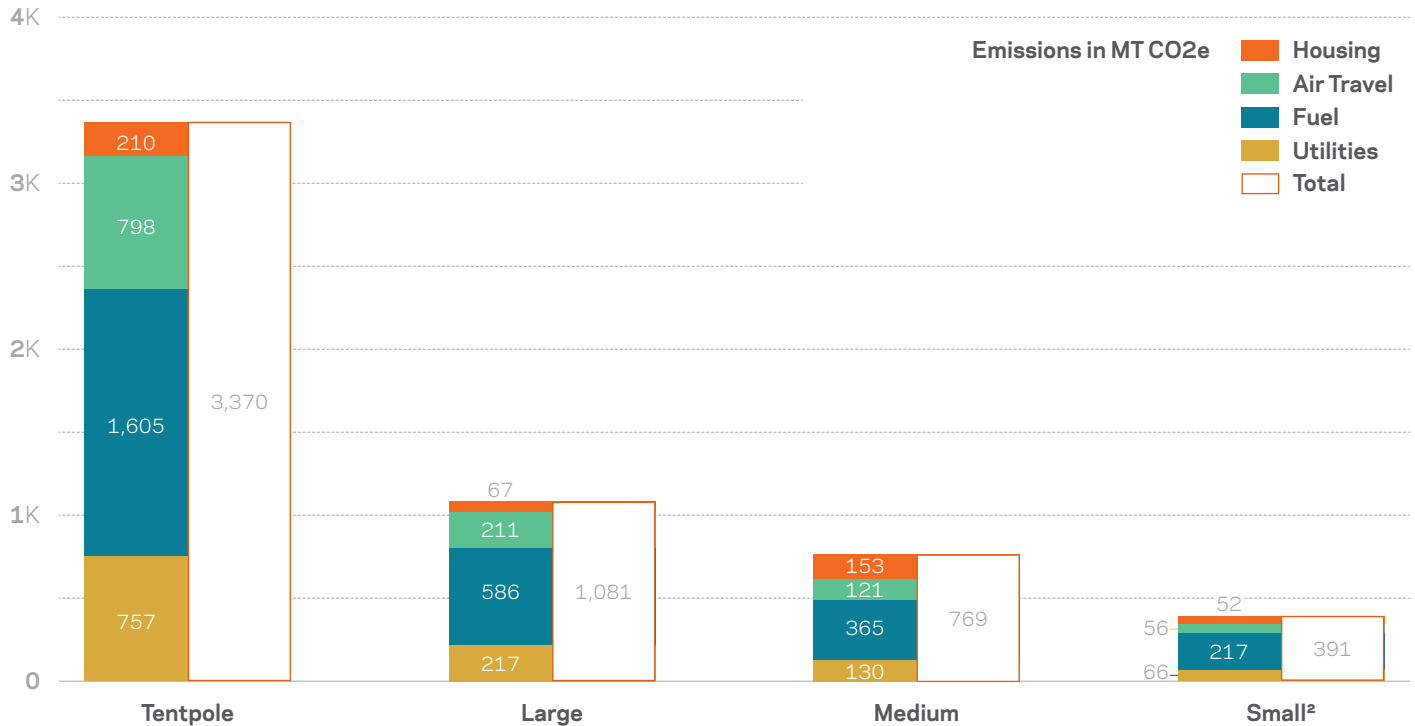
With this in mind, SPA is releasing this report, which outlines industry-wide production carbon emission averages for SPA's member company productions in the years between 2016 and 2019. Productions included in this report (161 feature films, ranging from tentpole movies to medium and small films, and 266 television series, from single and multi-camera TV series to scripted and unscripted shows, shot in major filming cities around the world) all used the Production Environmental Accounting Report (PEAR), created in partnership by SPA and the Producers Guild of America Foundation's PGA Green initiative. Findings confirm production areas that create the most environmental impact and illuminate priorities moving forward, including a transition to clean, renewable energy solutions.

Addressing climate change is an ongoing challenge, and SPA—whose member companies include Amazon Studios, Amblin Partners, Disney, Fox Corporation, NBCUniversal, Netflix, Participant, Sony Pictures Entertainment, ViacomCBS and WarnerMedia—remains committed to exploring and developing solutions, sharing industry findings, and publishing studies to address this important issue.

SPA's goal is to **provide industry insights into high impact areas** and **mobilize stakeholders** to take even greater action to accelerate systemic, operational change.

# Feature Films

## Average Emissions per Feature



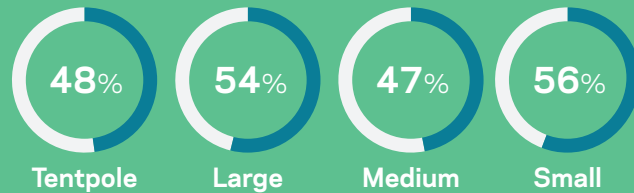
The data from tentpole productions showed the average carbon footprint of **3,370 metric tons** – or about **33 metric tons** per shooting day. Large films had a carbon footprint of **1,081 metric tons**, medium films had a carbon footprint of **769 metric tons**, while small films had a carbon footprint of **391 metric tons**.

<sup>1</sup> Production categories are determined by the film's below-the-line shooting budget and do not include above-the-line expenses such as cast salaries or post-production expenses such as visual effects. A tentpole has a budget of USD\$70 million and above; a large production is between USD\$40-70 million; a medium production is between USD\$20-40 million; and a small production is USD\$20 million and below.

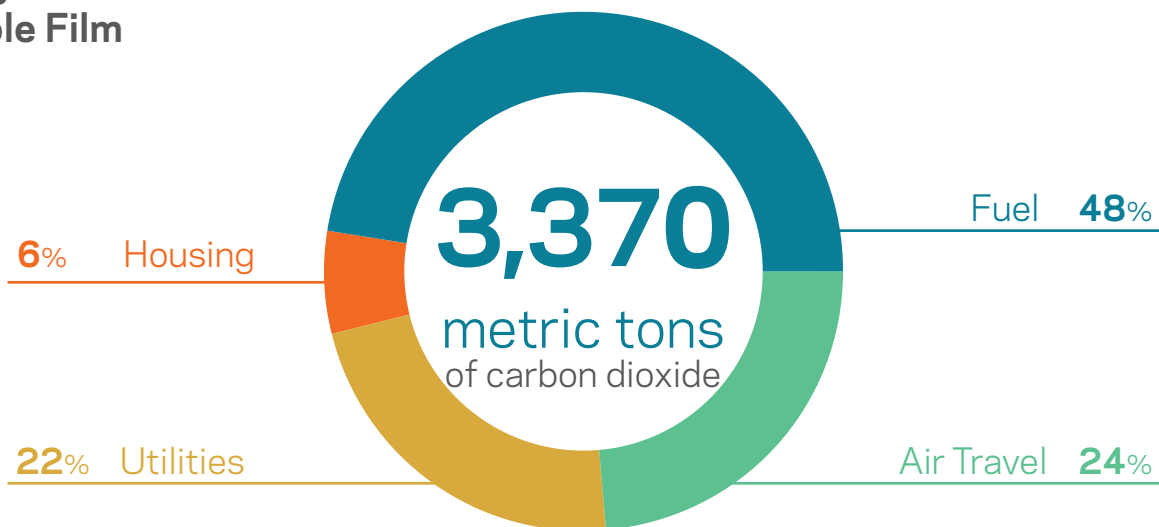
<sup>2</sup> For the purposes of this report, Small, Micro and Digital productions have been combined.

Across all feature films, the largest contributing factor was fuel consumption. Fuel is mainly used in production vehicles and generators.

#### Fuel Consumption Emissions per Feature



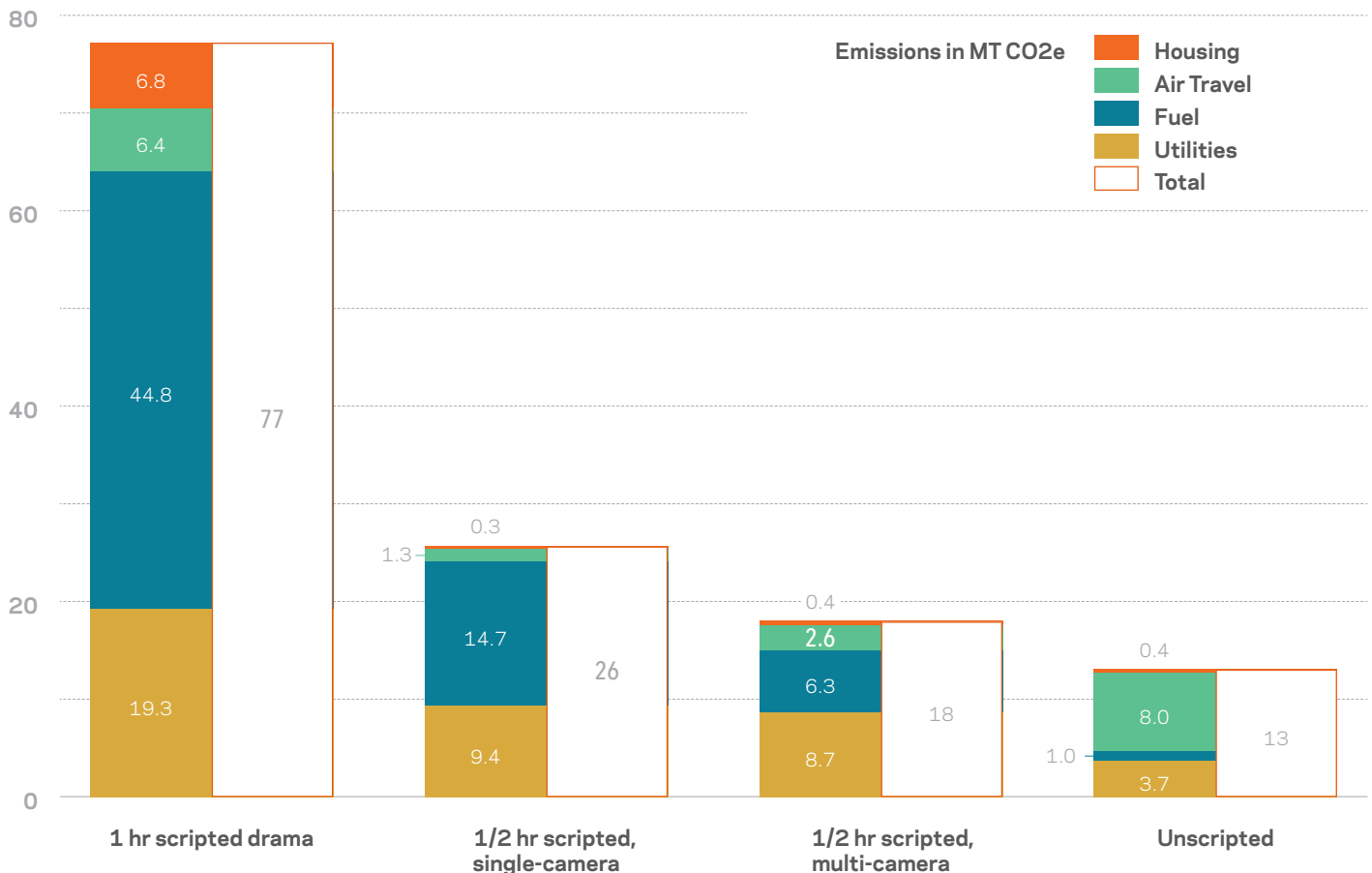
### Average Total Emissions of a Tentpole Film



- For tentpole productions, fuel consumption made up nearly **48%** of the average footprint.
- For all feature film productions, air travel and utilities contributed relatively equally to the overall carbon footprint. For tentpoles, air travel and utilities contributed about **24%** and **22%** of the carbon footprint, respectively.
- Accommodations such as hotels and housing accounted for the smallest amount of carbon emissions, contributing only **6%** to tentpole films.

# Television Series

## Average Emissions per Episode

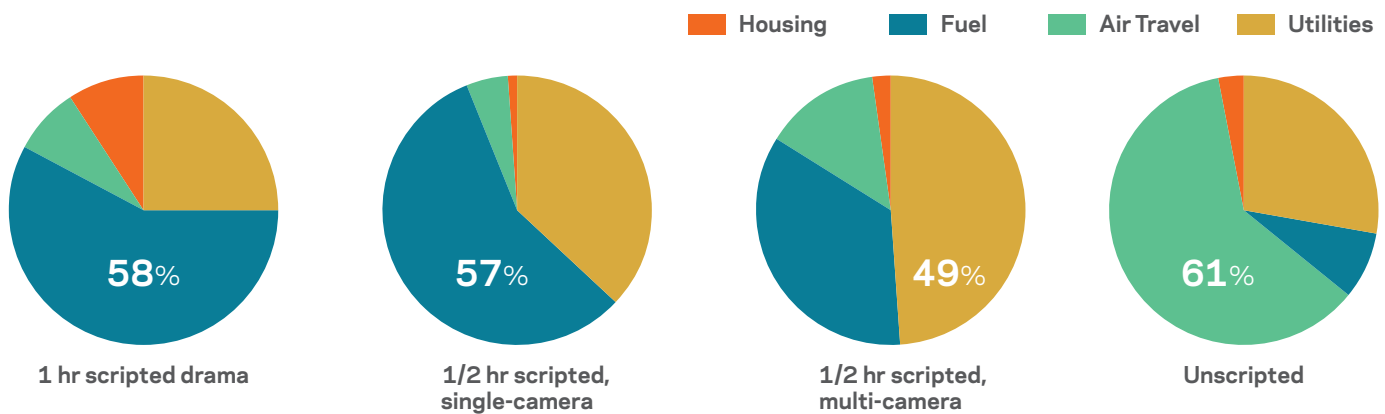


For television, the data from 159 one-hour scripted dramas showed that the average carbon footprint per episode was **77 metric tons**.<sup>3</sup> The 1/2 hour scripted single-camera shows had a carbon footprint of **26 metric tons**, and the 1/2 hour scripted multi-camera shows average **18 metric tons**. Unscripted shows had a carbon footprint of **13 metric tons**.

<sup>3</sup> As the number of television episodes in a season varies substantially from show to show, averages are shown per episode and season totals are not included in this report.

Differences in these averages are not only because of the length of the show. In general, one-hour scripted dramas will be filmed on location more often than 1/2 hour scripted single-camera shows. Additionally, 1/2 hour multi-camera shows are faster to film than 1/2 hour single-camera shows and are mostly filmed on stage with very little, if any, location shooting.

#### Largest Emission Source per Episode



Although fuel was the largest contributing factor to emissions for one-hour scripted dramas and single-camera series, utilities were the largest factor for multi-camera series at **49%**, and air travel was the biggest contributing factor for unscripted TV at **61%**.

## Research Notes

- All productions included in these averages used the Production Environmental Accounting Report (PEAR), which was created in partnership by SPA and the Producers Guild of America Foundation's PGA Green committee.
- Production data was global and encompassed the major production hubs of Los Angeles, New York, Atlanta, Vancouver, Toronto and London, among other cities.
- The PEAR, which is open to all in our industry and can be downloaded free of charge at [GreenProductionGuide.com](http://GreenProductionGuide.com), follows the Greenhouse Gas (GHG) Protocol. It includes direct emissions, such as those from fuel, as well as indirect emissions from purchased electricity, air travel, and accommodations in its calculations.
- While the PEAR also tracks impact areas such as paper and plastic, the averages in this report solely focus on carbon emissions from a production.

# Looking Ahead

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Given that emissions from fuel use are most often the primary contributor to a production's carbon footprint, **SPA has prioritized finding solutions to transition the fossil fuels used in film and television productions to clean, renewable energy solutions.** Fuel is used by productions for transportation as well as equipment such as the generators used to power sets and base camp.

For transportation, existing technologies like electric and hybrid rental vehicles are increasingly in demand by productions, and more sustainable fuels, like renewable diesel, can be used as transitional alternatives until electric vehicle (EV) technology is fully developed for heavy duty vehicles required for production. In terms of fuel used in generators, electrical grid tie-ins reduce the need

for diesel generators. These can be installed temporarily by production or permanently by local governments and utilities. When tie-ins are not available, emerging developments in battery generator technology promise to provide clean, portable power alternatives to diesel generators. Powering equipment with electricity from battery generators directly improves air quality on set while also eliminating noise pollution, improving human health while reducing overall carbon emissions for the production.

Limitations to existing infrastructure on sound stages, like lack of access to grid power or charging stations, pose challenges to electrification on production. Additionally, due to the continued growth of productions globally, some facilities recently converted for production use, such as warehouses, may lack adequate power for filming needs. Further investment in infrastructure, such as power drops for grid access, more onsite renewables, and clean power purchases for more renewable grid power, can also reduce emissions for production.





**Energy efficiency is also a priority for sustainable production.** In recent years, the rapid advancement and wide-spread adoption of LED lighting for production has significantly reduced electrical demand on set while also revolutionizing the creative process. Additional energy efficient equipment, like off-grid solar trailers, could further reduce the environmental impacts of production while serving necessary functions.

Though these cleantech solutions are already being successfully implemented by productions to some degree, they are not yet available at the required scale

and in every city, and there are limited solutions for the emissions associated with certain categories such as air travel.

SPA's goal is to provide industry insights into high impact areas and mobilize stakeholders to take even greater action to accelerate systemic, operational change. In addition to our commitment to publish findings every two years, SPA will continue to explore and develop solutions to reduce the environmental impact in film and television production.

In addition to the PEAR, SPA and the PGA Green committee have created other tools designed to help films and television shows plan, communicate, implement, and track sustainable production practices on set. The tools, which are free to use and can be downloaded on [GreenProductionGuide.com](https://www.greenproductionguide.com), include:

- The PEACH (Production Environmental Actions Checklist) green practices that each department can implement throughout production. The PEACH also serves as an application for an **Environmental Media Association Green Seal**.
- Infographics that offer a helpful visual guide to review sustainable best practices in the office, on location, and on stage.
- Tips, memos, and signage to communicate sustainability with crew, as well as fact sheets on renewable diesel and other pressing topics.
- Resources to help donate excess food or set materials in support of the local community.
- A vendor database to help find local companies that offer sustainable products and services for production.

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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.

SPA members include Amazon Studios, Amblin Partners, Disney, Fox Corporation, NBCUniversal, Netflix, Participant, Sony Pictures Entertainment, ViacomCBS and WarnerMedia.

For More Information: [www.sustainableproductionalliance.com](https://www.sustainableproductionalliance.com)