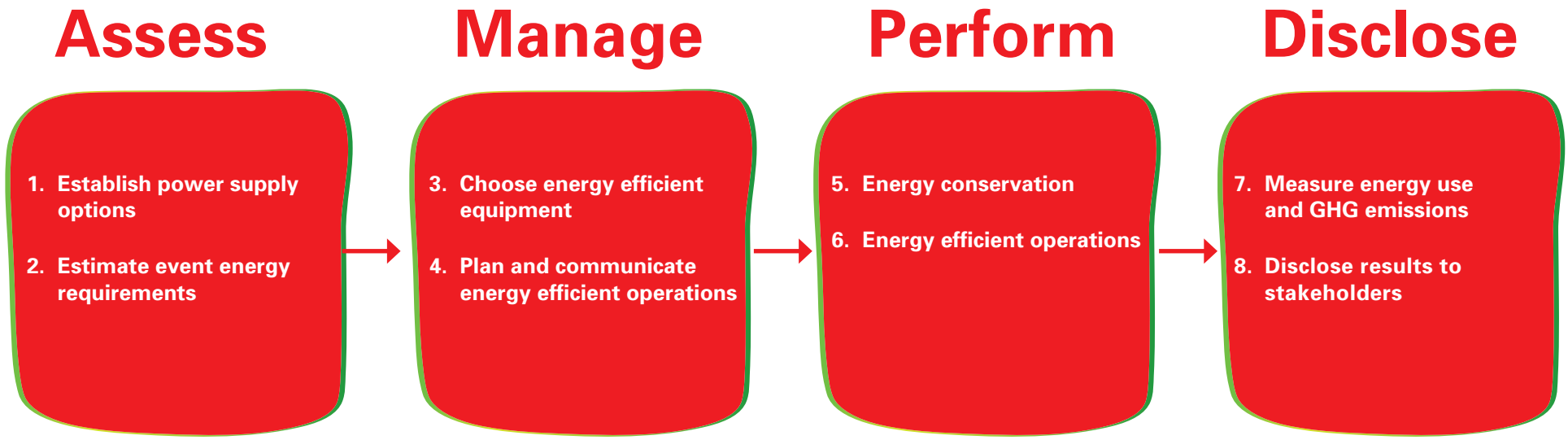
Checklist

Design for Energy Efficiency

The purpose of this Checklist is to provide prompts for users on implementing energy efficiency in Outdoor Events. For more detailed information on the energy efficiency considerations for outdoor events, please refer to the Energy Efficient Outdoor Events Fact Sheets on Permanent Power and Temporary Power.

Greener Live Performances

through energy efficiency



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Assess

Establish Power Supply Options

The first thing to understand is where your power supply is coming from and what options are available to you. Using mains power supply is generally more efficient than mobile power generators. Investigate whether renewable energy supply is available.

House Power (Permanent Mains/Grid Supply)

- ❑ House power is provided from non-renewable energy mains supply
- ❑ House power is provided from renewable energy mains supply
- ❑ House power is provided from permanent renewable energy installed on-site
- ❑ The event will purchase *GreenPower* credits equivalent to kWh of house power consumed

Temporary Power

- ❑ Petrol or diesel-fuelled mobile generators are used
- ❑ Biodiesel-fuelled mobile generators are used
- ❑ Portable solar power generators are used
- ❑ Pedal power generators are used

Innovation and Emerging Technology

- ❑ Battery banks are used to cover low loads
- ❑ Amenities and/or site cabins are solar powered
- ❑ Traders provide their own, stand-alone renewable energy
- ❑ Innovative and emerging power supply technology is used and demonstrated

Definition

House power:

Power supplied by the venue or site owner, usually be sourced from the mains electricity grid.

Read more Guidance

LPA Fact sheets:

Energy and Fuel Efficiency at Outdoor Music Events.

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Assess

Estimate Event Energy Requirements

In order to plan action to become more energy efficient, and to be able to measure whether efficiencies have been achieved, you need to understand what power is likely to be needed for your event.

Power Requirements

- ❑ Previous power consumption and/or estimated consumption is calculated and compared (kWh and fuel) to establish likely power demand for upcoming event

- ❑ The following power users' power requirements are requested (amps, voltage, wattage, times)
  - ❑ Performers
  - ❑ Food traders/caterers
  - ❑ Non-food traders
  - ❑ Bars
  - ❑ Amenities
  - ❑ AV Suppliers
  - ❑ Installations/décor
  - ❑ Activities/entertainment providers
  - ❑ Sponsors
  - ❑ Media

- ❑ Communicate with performers around energy efficiency and engage their participation in designing energy efficient lighting plans
- ❑ Challenge power estimations and work to establish reduction targets
- ❑ Previous and current event power plans and consumption are assessed to look for efficiency opportunities

Temporary Power:

- ❑ Power requirements are calculated and mobile generator sizing, placement and running times are co-ordinated to optimise efficiency, to result in;
  - ❑ Fewer generators
  - ❑ Smaller generators
  - ❑ Shorter running times
  - ❑ Enable complete power down of generators
  - ❑ Optimal loading of generators

- ❑ Communicate with performers around energy efficiency and engage their participation in designing

Definition

kWh – kilowatt hour.

A measure of power used per hour expressed in multiples of 1000.

Read more Guidance

LPA Fact sheets:

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Manage

Commitment to Energy Efficiency

Formalising your commitment to energy efficiency is important. Implementing policies ensures top management are on board and provides objectives for the team to work towards.

Event Management

- ❑ Establish energy management policy
- ❑ Establish a power-down policy
- ❑ Set power reduction objectives
- ❑ Incentivise reduction performance, including contracting in
- ❑ Establish kWh and fuel metering
- ❑ Keep accurate records of previous event's power demand and reduction initiatives
- ❑ Establish a power quota for users
- ❑ Power users must opt-in and pay for more power provision

Choose Energy Efficient Equipment

The first step to energy efficiency is to choose energy efficient equipment. Stage power will generally make up about 1/3 of the event's power consumption. Remember to communicate to those sourcing or supplying light and sound equipment that you're after an energy efficient design. This could include the venue, bands or AV hiring companies.

Lighting and Sound

- ❑ Lighting designers and suppliers are requested to include energy efficiency in design plans to achieve low energy lighting effects
- ❑ Energy efficient stage lighting and sound equipment is provided by the event or venue
- ❑ Sound technicians, performers and sound equipment suppliers are requested to use energy efficient equipment
- ❑ Lighting designers are required to meet a prescribed power limit
- ❑ Lighting towers use LED lighting technology
- ❑ Lighting towers are powered by renewable energy (e.g. biodiesel, solar)

Definition

Energy Efficient:
using less energy for the same result.

Fuel Efficient:
using less fuel for the same power output.

Read more Guidance

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Manage

Energy Efficient Equipment and Operations

Traders and bars will generally use up another 1/3 of the event's power demand. It's important to engage or even require these power users to source the most energy efficient equipment possible.

When using temporary power supply, the second part to achieving an energy efficient event is to plan the site layout and power user location to optimise the efficiency in mobile power generator sizing and siting. Planning power demand and user location alongside generator siting and sizing will enable energy efficiency.

Amenities, Bars, Traders

- ❑ Caterers, bars and traders are provided or required to use energy efficient lighting and equipment
- ❑ Gas powered deep fryers, water heating/boilers and bain-maries are used
- ❑ Site buildings and amenities use energy efficient lighting and gas water heating/boilers
- ❑ Use of glass front fridges is avoided especially in temporary structures with sun exposure

Mobile Power Generator Efficiency

- ❑ Mobile power generators have a high fuel efficiency rating
- ❑ Mobile power generators are well maintained, and proof of maintenance is provided by supplier
- ❑ Multiple smaller generators are used in parallel, including bump-in period
- ❑ The general power outlet on lighting towers is utilised rather than additional generators

Site Layout and Power Planning

- ❑ Site layout and configuration minimises the need for, or optimises the effectiveness of lighting and sound amplification
- ❑ Site layout planning considers power user demand to plan-in efficient power distribution
- ❑ Site layout is planned so power distribution can be clustered with overnight (24 hr) loads on separate generators than for show-time loads
- ❑ Site layout is planned so power is distributed to optimise loads on generators for as long as possible
- ❑ Site layout allows fewer larger generators if load is relatively constant throughout the event
- ❑ Site cabins and amenities are placed in the shade to reduce need for AC

Guidance

GHG – greenhouse gas emissions.

Measured in kg of CO_2 per litre of fuel or kWh of power.

Read more Guidance

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Manage

Communicate Energy Efficient Operations

Changing the consumption behaviour of power users is a key part of achieving energy efficiency success. Ensure power users that have a part to play know in advance what is required of them, and are reminded at the event.

Communicating Energy Efficient Operations to Power Users

- ❑ Power users are engaged in energy efficiency pre-planning and initiatives
- ❑ The event's energy efficiency policy, aspirations, objectives and initiatives are communicated to power users and event participants through:
  - ❑ Contracts
  - ❑ Applications forms
  - ❑ Technical specifications
  - ❑ Site and event information
  - ❑ Site inductions
  - ❑ Emails and newsletters
  - ❑ Signage or visual metering
  - ❑ Face to face visitation on-site
  - ❑ Campaigns to engage participation
  - ❑ Rewards or penalties

Communicating Energy Efficient Operations to Staff, Crew and Contractors

- ❑ The event's energy efficiency policy, aspirations, objectives and initiatives are communicated to event crew and they are engaged in reductions goals through:
  - ❑ Education and training
  - ❑ Employment Contracts
  - ❑ Induction manuals
  - ❑ Site inductions
  - ❑ Required procedures
  - ❑ Emails and newsletters
  - ❑ Signage or visual metering
  - ❑ Face to face visitation on-site
  - ❑ Campaigns to engage participation
  - ❑ Rewards or penalties

Definition

Power diet:
placing power users on an upper limit. Apply penalties (fees) for over-draw by users.

Read more Guidance

LPA Fact sheets:

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Perform

Implement Energy Efficiency Plans

Implementing all your plans and policies is the next step. Put systems and checks in place to ensure successful implementation and achievement of your energy efficiency objectives.

Energy Conservation

- ❑ Power down policy is implemented and compliance monitored
- ❑ Auto shutdown timers are used on lighting towers and general site lighting
- ❑ Battery chargers (for phones, two-way radios etc) are switched off when fully charged
- ❑ Daytime stage lighting use is minimised or eliminated
- ❑ Daylight is used in preference to powered lights for site buildings and amenities
- ❑ Review bump-in, rehearsal and sound check times to streamline as much as possible

Fuel-Efficient Operations

- ❑ Peaks and troughs in power demand are considered when sizing and siting mobile generators and in distribution planning to flatten out likely long-running demand drops or short-lived but very high demand spikes
- ❑ Mobile generators are sized and sited to optimise demand load to 70 to 80% of capacity
- ❑ Multiple smaller generators are used in parallel to enable switch on when required
- ❑ Smaller generators are provided for extended bump-in/site build phase
- ❑ Mobile generators are sited and distribution set so some generators can be switched off completely

Monitoring Efficiency Plans

- ❑ Power demand and generator loading is monitored during the event
- ❑ Staff are allocated to ensure efficiency initiatives and power demand is as stated by users
- ❑ Ensure mobile generator sizing and distribution as planned, is in place
- ❑ Staff monitor conformity to the power-down policy

Guidance

Watts = Amps x Volts
Amps = Watts / Volts

Amperage: the strength of a current of electricity expressed in amperes.

Voltage: electrical potential or potential difference expressed in volts.

Read more Guidance

LPA Fact sheets:

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Perform

Communicate Energy Efficient Operations

A great legacy of events is their power to increase awareness and inspire behaviour change by attendees. By communicating your energy efficient plans, demonstrating them in action and including attendees in energy efficiency initiatives, you'll be contributing to a positive event legacy.

Communicating Energy Efficient Operations to Event Attendees

- ❑ The event's energy efficiency policy, aspirations, objectives and initiatives are communicated to event attendees:
  - ❑ Emails and newsletters
  - ❑ Website
  - ❑ Signage
  - ❑ Event program (printed/app)

- ❑ 'Eco-edu-tainment' is included in event activities, to engage attendees around energy efficiency
  - ❑ Solar phone charging
  - ❑ Pedal power phone charging
  - ❑ Kinetic energy dance floor
  - ❑ Hands-on energy activities
  - ❑ Pedal power stage or cinema
  - ❑ Pedal power smoothies (!)
  - ❑ Visual power monitoring
  - ❑ Interactive displays

GreenPower

The government program through which renewable energy is sold onto the mains power grid by renewable energy generators, and purchased from energy retailers by users, in the form of renewable energy tariffs. Events may become 'GreenPower' events by purchasing the equivalent kWh in credits, even from fossil fuelled mobile gensets.
www.greenpower.gov.au

Read more Guidance

LPA Fact sheets:

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Disclose

Measure and Disclose Energy Consumption

The key to management is measurement and the key to sustainability performance reporting is disclosure. Measure the impacts of your power consumption in terms of kWh, litres of fuel and GHGs produced. Also look at indicators of efficiency such as $/kWh or kWh per person. These can be used as figures to benchmark from one event to the next and to determine the energy efficiency of your event.

Permanent Power Supply

- ❑ Total kWh consumed from 'house' power (mains)
- ❑ Total kWh permanent on-site energy supply
- ❑ Total proportion from renewable energy

Gas

- ❑ Total bottled gas (kg)
- ❑ Total mains gas (kWh)

Greenhouse Gas Emissions

- ❑ Total power and gas-related GHGs
- ❑ Total kg GHGs per event attendee (per day or total event)
- ❑ Reductions in energy consumption and GHG emissions due to conservation and efficiency initiatives.

Temporary Power Generators

- ❑ Total kWh from zero-emissions mobile supply
- ❑ Total litres of fuelled used in mobile generators, by fuel type
- ❑ Total number of fuelled generators and total kVa
- ❑ Total amps requested and required
- ❑ Average power load per generator and in total

Renewable Energy

- ❑ Total percentage from renewable supply
- ❑ Total *GreenPower* purchases for kWh from both mains and mobile supply
- ❑ Total investment in renewable energy technology or infrastructure for the event

Energy Efficiency

- ❑ Average kWh per hour consumed
- ❑ Cost per kWh hour (include fuel, equipment hire and direct personnel)
- ❑ kWh per attendee
- ❑ Total kWh energy saved due to efficiency initiatives
- ❑ Total cost saved due to efficiency initiatives

Disclosure to Stakeholders

- ❑ Total energy-related GHGs
- ❑ Energy efficiency performance

Guidance

KVA:
Measure of power output and generator sizing, expressed in 1000 of voltamperes delivered

Read more Guidance

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