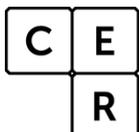
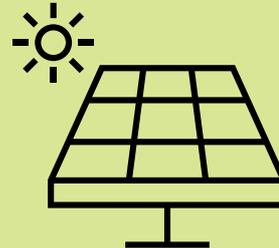
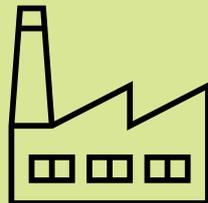
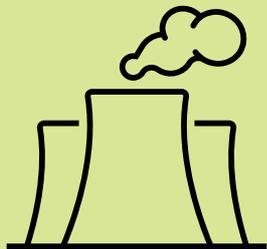


Reporting blended fuels, other fuel mixes, bitumen and explosives guideline

July 2023





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Definitions and Abbreviations

Term	Meaning
NGER	National Greenhouse and Energy Reporting
NGER Act	<i>National Greenhouse and Energy Reporting Act 2007</i>
NGER legislation	NGER Act, NGER Measurement Determination and NGER Regulations
NGER Measurement Determination	National Greenhouse and Energy Reporting (Measurement) Determination 2008
NGER Regulations	National Greenhouse and Energy Reporting Regulations 2008
L	Litres
t	Tonnes
Reporter	An entity required to report emissions and energy production and consumption to the Clean Energy Regulator under section 19, 22G, or 22X of the NGER Act
SNG	Simulated Natural Gas (also known as ‘synthetic natural gas’), means a mixture of vaporised ‘liquefied petroleum gas’ and compressed air. See Frequently asked questions for more information.

Please refer to Division 2 of the NGER Act, 1.03 of the NGER Regulations and Division 1.1.2 of the NGER Measurement Determination for defined terms in NGER Legislation.



Disclaimer

This guideline has been developed by the Clean Energy Regulator (CER) to assist entities to comply with their reporting obligations under the [National Greenhouse and Energy Reporting Act 2007](#)¹ (NGER Act) and associated legislation.

This guideline only applies to the 2022–23 NGER reporting year and should be read in conjunction with the NGER Act, [National Greenhouse and Energy Regulations 2008](#)² (NGER Regulations), and [National Greenhouse and Energy Reporting \(Measurement\) Determination 2008](#)³ (NGER Measurement Determination), as in force for this reporting period. These laws and their interpretation are subject to change, which may affect the accuracy of the information contained in the guideline.

The guidance provided in this document is not exhaustive, nor does it consider all circumstances applicable to all entities. This guidance is not intended to comprehensively deal with its subject area, and it is not a substitute for independent legal advice. Although entities are not bound to follow the guidance provided in this document, they must ensure they meet their obligations under the [National Greenhouse and Energy Reporting \(NGER\) scheme](#)⁴ at all times. CER encourages all users of this guidance to seek independent legal advice before taking any action or decision on the basis of this guidance.

CER and the Commonwealth of Australia will not be liable for any loss or damage from any cause (including negligence) whether arising directly, incidentally, or as consequential loss, out of or in connection with, any use of this guideline or reliance on it, for any purpose.

If an entity chooses to meet their obligations under the NGER scheme in a manner that is inconsistent with the guidance provided in this document, CER, or an independent auditor, may require the entity to demonstrate that they are compliant with requirements of the NGER Act, NGER Regulations, and/or the NGER Measurement Determination. Entities are responsible for determining their obligations under the law and for applying the law to their individual circumstances.

¹ <https://www.legislation.gov.au/Series/C2007A00175>

² <https://www.legislation.gov.au/Series/F2008L0223>

³ <https://www.legislation.gov.au/Series/F2008L02309>

⁴ <http://www.cleanenergyregulator.gov.au/NGER/Pages/default.aspx>



2022–23 updates

Changes in this document for the 2022–23 reporting year:

- Minor stylistic and formatting changes have been made throughout this guidance document
- Page 1: guidance document name changed to include reporting of explosives
- Page 3: added definition for 'simulated natural gas'
- Page 6: added context for simulated natural gas in other fuel mixes
- Page 7: updated the item numbers of ethanol and gasoline
- Pages 7 and 8: added the context for gaseous fuels in estimating the composition of purchased blended fuels
- Pages 111 – 13: added information on reporting of biomethane blended fuel
- Page 13: added information on reporting a blend of gaseous fuel with energy commodity (Hydrogen)



1. Blended fuels and other fuel mixes

This document describes the requirements for reporting the production and the consumption of blended fuels and fuel mixes at a facility. See [NGER Defining facilities⁵](#) for guidance on what constitutes a facility.

When reporting energy production and consumption data, only those fuels and energy commodities for which there are applicable methods in the NGER Measurement Determination and that are listed in Schedule 1 of the NGER Regulations should be reported.

The requirements for reporting blended fuels and fuel mixes will depend on the:

- ingredients (fuels) in the blend or mix
- product created by the blending or mixing
- end use of the blended fuel or fuel mix.

The lifecycle of blended fuels and fuel mixes may take place across facility boundaries. Reporters will need to determine which reporting requirements are relevant to their specific circumstances.

1.1. What is a blended fuel?

Section 1.8 of the NGER Measurement Determination defines:

- a blended fuel as a fuel that is a blend of fossil and biogenic carbon fuels - for example, E10 fuel is a blend of gasoline (fossil fuel) and up to 10% ethanol (biogenic carbon fuel)
- ‘biogenic carbon fuel’ as energy that is:
 - derived from plant and animal material, such as wood from forests, residues from agriculture and forestry processes, and industrial, human or animal wastes
 - not embedded in the earth, like coal oil or natural gas.

Examples of biogenic carbon fuels under the NGER legislation are listed at items 10 to 16 and 28 to 30 in Schedule 1 of the NGER Regulations.

The NGER legislation does not define fossil fuels. However, taking the ordinary meaning of the term, a fossil fuel is a carbon-based fuel from fossil hydrocarbon deposits, including coal, oil and natural gas.

1.2. Other fuel mixes

Under certain circumstances, other mixes of fuels that fall outside the specific definition of a ‘blended fuel’ under section 1.8 of the Measurement Determination are also required to be reported. For example, this may include a fuel made from mixing 2 fossil fuels together (and does not contain any biogenic carbon fuel).

In general, the production and consumption of all fuels listed in the NGER legislation must be reported, including when consumed as a fuel mix. Where a corporation is unsure how to report a fuel mix, they should [contact CER⁶](#).

Please note simulated natural gas (SNG) is neither a blended fuel nor a fuel mix. Please see Frequently asked questions for information on how to report SNG.

⁵ <http://www.cleanenergyregulator.gov.au/DocumentAssets/Pages/NGER-Defining-facilities.aspx>

⁶ <http://www.cleanenergyregulator.gov.au/About/Contact-us>



2. Reporting blended and mixed fuels

2.1. Consumption of blended fuels which are not listed fuels

In general, if a reporter consumes blended fuels they are required to report consumption of the blended or mixed fuel's ingredients individually. The end use of a blended or mixed fuel will determine whether a corporation will need to report the ingredient fuels as consumed with or without combustion.

Example 1—lifecycle reporting of a blended fuel

Facility 1 (refining) – Facility 1 produces both gasoline and ethanol which is transported to Facility 2. Facility 1 is required to report Energy Production for the quantities of ethanol and gasoline produced at the facility.

Facility 2 (blending) – Facility 2 receives the ethanol and gasoline from Facility 1. Facility 2 blends the ethanol (biogenic fuel) with the gasoline (fossil fuel) together to produce E10 consisting of 7% ethanol and 93% gasoline. Facility 2 sells 10,000 litres (L) of its E10 to Facility 3.

As E10 is not a fuel listed in Schedule 1 of the NGER Regulations, the 'consumption' of ethanol and gasoline to make the blend and production of E10 blend is not required to be reported by Facility 2 as no new fuel type has been created.

Facility 3 (final consumption—combustion) – Facility 3 acquires 10,000 L of E10 from Facility 2 for use in its fleet vehicles. Facility 3 is required to report the final Energy Consumption (fuel combustion). In accordance with the manufacturer's specifications (Facility 2), the total 10,000 L of E10 will consist of 700 L of ethanol (7%) and 9,300 L of gasoline (93%).

In this example, E10 is used to fuel fleet cars for Facility 3, meaning the fuel is combusted for transport energy purposes.

As both ethanol and gasoline are listed fuels in Schedule 1 of the NGER Regulations, the corporation with operational control of Facility 3 must report the consumption of these fuels:

- ethanol (item 53 of Schedule 1 of the NGER Regulations—'ethanol for use in an internal combustion engine') as consumed with combustion
- gasoline (item 35 of Schedule 1 of the NGER Regulations—'gasoline (other than for use as fuel in an aircraft)') as consumed with combustion.

2.1.1. Estimating the composition of purchased blended fuels

Part 2.6 of the NGER Measurement Determination sets out the ways in which reporters can determine the amounts of each kind of fuel that are in blended solid, liquid, and gaseous fuels.

For blended solid fuels, reporters are able to adopt the outcome of:

- sampling and analysis undertaken by the manufacturer, or
- their own sampling and analysis.

For blended liquid fuels, reporters are able to use:



- the determination of the manufacturer of each kind of the fuel in the blend, or
- their own sampling and analysis.

For blended gaseous fuels, reporters are able to:

- adopt the determination by the producer of the fuel or the operator of the pipeline that supplies the fuel, and / or
- use their own sampling and analysis.

Please note that the NGER Measurement Determination describes how sampling of these blended fuels must be undertaken:

- for solid fuels, sampling must be undertaken in accordance with subsections 2.12(3) and (4), and the analysis must be performed in accordance with one of the prescribed standards in paragraph 2.66(1)(b)
- for liquid fuels, sampling must be undertaken in accordance with subsections 2.47(3) and (4), and the analysis must be performed in accordance with one of the prescribed standards in paragraph 2.67(b)
- **for gaseous** fuels, sampling must be undertaken in accordance with subsections 2.26(3) and (4), and the analysis must be performed in accordance with one of the prescribed standards in paragraph 2.67A (b) (ii).

2.2. Blending or mixing fuels to produce a new fuel

If fuels are blended or mixed to form a fuel listed in Schedule 1 of the NGER Regulations, reporters need to report the:

- production of the ingredient fuels which are listed in Schedule 1 of the NGER Regulations (if they are produced at the facility)
- consumption of the ingredient fuels (without combustion) which are listed in Schedule 1 of the NGER Regulations
- production of the new fuel which is listed in Schedule 1 of the NGER Regulations if it is produced at the facility.

2.3. Consumption of blended or mixed fuels which are listed

Consumption of the new blended or mixed fuel created will also need to be reported. How this is reported will depend on the way in which consumption of the new energy commodity occurs. That is, if the new mixed fuel is used for combustion purposes, then it will be reported as consumed with combustion. If the new product is used for non-combustion purposes, then it will be reported as consumed without combustion.



Example 2—Lifecycle reporting of a mixed fuel

Facility 1 (mining) – Facility 1 produces both anthracite and brown coal which is transported to Facility 2. Facility 1 is required to report energy production for the quantities of anthracite and brown coal produced at the facility.

Facility 2 (mixing/processing) – Facility 2 receives the anthracite and brown coal from Facility 1. Facility 2 mixes the anthracite and brown coal and presses the mixture into coal briquettes. Facility 2 reports the energy consumption (without combustion) associated with the quantities of anthracite and brown coal as well as the energy production associated with the quantity of coal briquettes produced. Facility 2 sells a quantity of coal briquettes to Facility 3.

As coal briquettes are a fuel listed in Schedule 1 of the NGER Regulations, the consumption of anthracite and brown coal as well as the production of coal briquettes is required to be reported as a new fuel type has been created.

Facility 3 (Final consumption—combustion) – Facility 3 acquires a quantity of coal briquettes from Facility 2 to combust for stationary energy purposes. Facility 3 is required to report the final energy consumption (with combustion) of the coal briquettes.

In some instances, the combining of 2 fuels results in a mixture which falls within the definition of one of the original ingredient fuels. This is because of the broadness of a fuel's definition within the NGER legislation.



Example 3—Mixtures of fuel oil and diesel oil

Reporters may need to use altered or specialised fuels. These could be formed as a mixture of 2 fuels listed within Schedule 1 of the NGER Regulations. The new mixed fuel should be compared against each of the fuels listed within Schedule 1 of the NGER Regulations to see if it falls within its definition.

For example, 'Company A' may create a mixture of 4 parts fuel oil to 1 part diesel oil to create a new product which they've dubbed '4:1'.

'Company A' would need to report energy consumed (without combustion) of both fuel oil and diesel oil quantities.

To know what they've produced, 'Company A' would need to compare their 4:1 product against each of the fuels listed within Schedule 1.

Once a fuel type has been determined, 'Company A' would need to report energy production of for the total quantity of 4:1 produced.

Where a corporation is unsure how to define a fuel mix, they should [contact CER](#)⁷.

2.4. How to report bitumen

Bitumen is a heavy petroleum derivative used in asphalt production and is used in the majority of road surfaces around Australia.

Reporters are required to report the production of bitumen at a facility. However, consumption of bitumen is not reportable unless it has been combusted (see Item 49 in Schedule 1 of the NGER Regulations).

⁷ <http://www.cleanenergyregulator.gov.au/About/Contact-us>



Example 4—reporting bitumen

Asphalt is a composite material commonly used to build roads. It is produced by mixing bitumen with heated aggregate and filler.

‘Corporation X’ has operational control of a facility (Facility A) that produces 20 tonnes (t) of bitumen, and supplies it to ‘Corporation Y’.

‘Corporation Y’ has operational control of a facility (Facility B) that mixes the 20 t of bitumen with heated aggregate and filler in a batching plant, to produce asphalt. ‘Corporation Y’ uses the asphalt to build a road at another site.

The production of the bitumen produced at ‘Facility A’ must be reported by ‘Corporation X’.

The consumption of bitumen to produce asphalt at ‘Facility B’ is not reportable by ‘Corporation Y’, because the bitumen is not combusted in the asphalt production process.

The use of asphalt by ‘Corporation Y’ to build a road is also not reportable.

2.5. Reporting of Biomethane and biomethane blended fuels

Biomethane is defined in the NGER Regulations as a high-methane content gas that is produced by biogas upgrading and is suitable for use as a natural gas substitute. Biogas is defined as a gaseous fuel derived or recovered from biomass. Any process that could be considered refining or stripping of impurities is captured in the definition of biogas upgrading in the NGER Regulations. The most common biogas upgrading processes are pre-treatment compression, drying and post-treatment processing or compression.

Reporting of use of landfill biogas for electricity production typically includes reporting of the following landfill biogas activities:

- emissions released from fuel use by certain industries (including electricity generation) (fuel combustion) with the activity Electricity production – gaseous fuels and the fuel type Landfill biogas that is captured for combustion (methane only)
- energy from electricity production (both used onsite and exported)⁸
- energy produced from Landfill biogas that is captured for combustion (methane only).

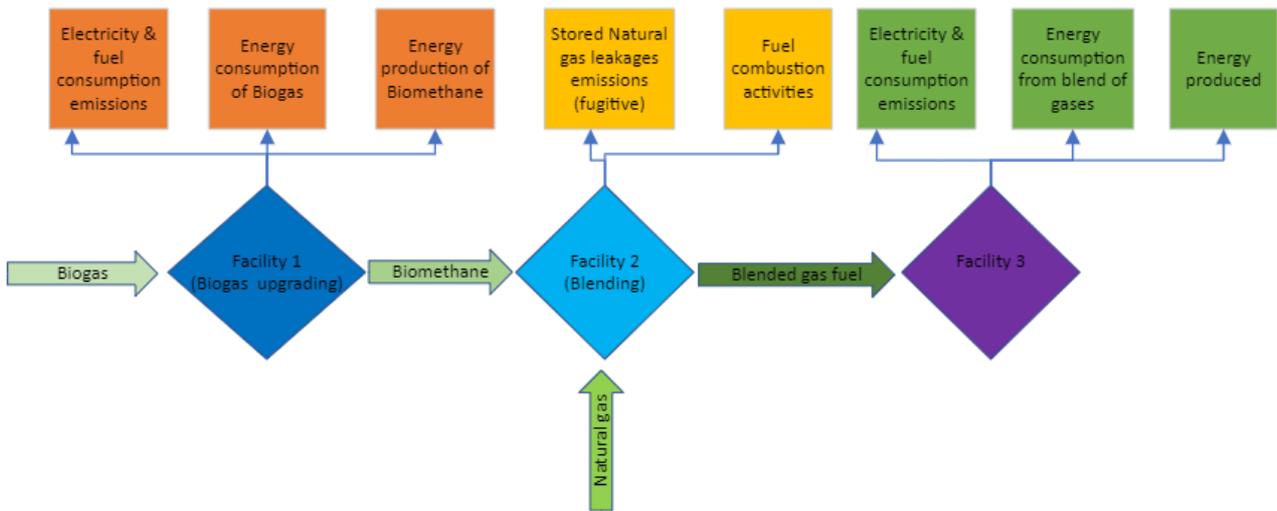
If landfill biogas is flared, emissions from solid waste at landfills for the fuel type ‘Landfill biogas that is captured for combustion (methane only)’ should be reported.

There are no reportable fugitive emissions associated with transport of biogas (by vehicle or pipeline) to the biogas energy plant or upgrading facility.

⁸ Where energy produced onsite was also consumed onsite, EERS will automatically create an activity ‘Total electricity consumed onsite that was produced for use onsite’.



Figure 1 Summary of processes usually involved in production of biomethane and NGER reporting requirements.



Case Scenario:

In Figure 1, Facility 1 receives biogas from waste or landfill facilities either by transport or by forced injection through a pipeline. The facility processes the biogas through any operations consistent with NGER Regulations for 'biogas upgrading' to create a 'biomethane' gas.

- Energy consumption of biogas that is upgraded to biomethane is to be reported as consumed without combustion.
- Energy associated with the biomethane produced needs to be reported as energy content of fuel produced.
- Where the produced biomethane is consumed, a fuel combustion activity (electricity production), emissions released from fuel use by certain industries (including electricity generation), and energy production activities similar to reporting for landfill biogas will need to be reported.
- Emissions released from combustion of gaseous fuel (biomethane) may also need to be reported if the consumption is for stationary or transport energy purposes - excluding electricity generation.

The biomethane may then be injected into the pipeline or stored. There are no reportable fugitive emissions associated with storage or transport of biomethane via a pipeline.

Facility 2 receives the biomethane from Facility 1. Facility 2 mixes the biomethane (a biofuel) with natural gas (a fossil fuel) to form a blended fuel (as defined in the NGER Measurement Determination). The blended gas is then injected into the pipeline for use in Facility 3.

Note: Facility 2 is not required to report any energy production/ consumption associated with making a blend. However, if the facility has natural gas or a natural gas/biomethane blend in storage, it needs to report the fugitive emissions for the natural gas component.

Facility 3 - final consumption by combustion. Facility 3 acquires the blended fuel from Facility 2 to run their operations. Facility 3 is required to report the final energy consumption (fuel combustion), based on the quantity of each gas present in the blended fuel. The quantity of each gas present which is also listed in Schedule 1 of the NGER Regulations and consumed through combustion is determined through analysis of



each fuel according to a standard (or equivalent) listed in section 2.26 (3&4) of the NGER Measurement Determination or be based on a determination by the manufacturer or supplier of the fuel.

Table 1 Summary of NGER reporting requirements involving Biomethane.

Activities	Facility 1 (Biogas upgrading)	Facility 2 (Blending)	Facility 3 (Consumption/ combustion)
Scope 1 emissions	✓	✓	✓
Energy consumed (without combustion)	Biogas	NA	Biomethane and Natural gas
Energy Production	Biomethane	NA	Biomethane and Natural gas blend

2.6. Reporting a mix of gaseous fuels and the energy commodity hydrogen

The requirement to report the production and consumption of the ‘energy commodity’ hydrogen only applies where hydrogen has been intentionally added to the fuel. You do not need to separately report production and consumption of hydrogen when the hydrogen is naturally present within another fuel or energy commodity listed in Schedule 1 of the NGER Regulations.

When hydrogen has been supplemented into a gaseous fuel mixture and consumed by combustion, the facility must report emissions from the fossil fuel or biogas present in the gas stream, in accordance with fuels listed in Schedule 1 of NGER Regulations. The energy consumption of hydrogen must be reported as energy consumed (not combusted).

Note: There is no threshold for the reporting of hydrogen energy production and energy consumption. All energy must be accounted for.

2.7. How to report explosives

Explosives are a specialised product in which the chemical energy contained within its ingredients is transformed into kinetic energy. They are used in the mining industry to assist in exploration and extraction of valuable materials. The composition of an explosive will vary, depending on the requirements of its use.

CER considers fuels that are used in the production and preparation of an explosive mixture must be reported as consumed without combustion (see item 2.68 of Part 2.7 of NGER (Measurement Determination)). They are to be reported by the entity that has operational control of the facility at the point of final mixing. There is no reporting of emissions or energy consumption associated with use of explosives.

[Example 5](#) outlines the reporting requirements for the manufacture and use of explosives.



Example 5—reporting explosives

A commonly used explosive in Australia is a mixture of ammonium nitrate and fuel oil, known as ANFO. The activities to be reported using an example of the manufacture and use of ANFO are listed below.

Manufacture of an explosive:

- Facility 1 combines fuel oil, a reportable fuel type appearing in Schedule 1 of the NGER Regulations, with ammonium nitrate, creating a mixture known as ANFO
- Facility 1 is required to report the quantity of fuel oil used during the manufacture of ANFO as consumed without combustion in accordance with section 2.68 of the NGER Measurement Determination.

On-site preparations of an explosive:

- Facility 2 acquires the ANFO mixture. Before use, Facility 2 adds additional diesel oil, a reportable fuel type appearing in schedule 1 of the NGER Regulations, to the ANFO. The fuel is added to help improve the explosive yield when the explosive is used
- Facility 2 is required to report the quantity of diesel oil added to the ANFO as consumed without combustion in accordance with section 2.68 of the NGER Measurement Determination.

Use of an explosive:

- Facility 2 uses the ANFO mixture as an explosive to help remove unwanted materials from their site
- there are no reporting requirements for emissions or energy consumption associated with use of the explosive.



3. Reporting energy production and consumption

Relevant definitions from the NGER legislation are summarised below:

- ‘fuel’ means a substance mentioned at items 1 to 57 in Schedule 1 of the NGER Regulations
- ‘energy’ includes the fuels and other energy commodities listed in Schedule 1 of the NGER Regulations
- ‘production of energy’ means the (see 2.25 of the NGER Regulations):
 - extraction or capture of energy from natural sources for final consumption by or from the operation of the facility, or for use other than in the operation of the facility
 - manufacture of energy by the conversion of energy from one form to another form for final consumption by or from the operation of the facility, or for use other than in the operation of the facility.
- ‘consumption of energy’, in relation to a facility, means the use or disposal of energy from the operation of the facility, including (see 2.26 of the NGER Regulations):
 - own-use
 - losses in extraction, production, and transmission.

Note: ‘use’ includes the consumption of energy in the transformation of one form to another form.

Reporters should be aware that the NGER legislation definition of ‘energy’ differs from the common uses of the term.

Reporting consumption without combustion

4.22 of the NGER Regulations details the requirements for reporting energy consumption under the NGER Act. Energy consumption must be reported where energy is consumed:

- by combustion [4.22(1)(a) of the NGER Regulations]
- by means other than combustion [4.22 (1)(b) of the NGER Regulations]
- to produce a mineral, chemical or metal product [4.22(2) and (3) of the NGER Regulations].

A report must include the amount of energy consumed by means other than combustion if the amount:

- exceeds the reporting thresholds mentioned in section 2.68 of the NGER Measurement Determination
- is not reported under paragraph 4.22 (1)(a), 4.22 (2), or 4.22 (3) of the NGER Regulations.

If any energy commodity listed in the NGER Measurement Determination or the NGER Regulations is consumed without combustion, then the thresholds and methodology in section 2.68 of the NGER Measurement Determination apply. It is important to note that section 2.68 is only applicable where no combustion of the fuel takes place.



More information and references

This guideline has been provided by CER to assist in the consistent accounting and reporting of greenhouse gas emissions, energy consumption and energy production using the NGER legislation.

More information

For more information, please contact CER:

Email: reporting@cleanenergyregulator.gov.au

Phone: 1300 553 542 within Australia

Website: www.cleanenergyregulator.gov.au

References

See [Guidelines⁹](#) for guidance on:

- defining a facility
- measurement criteria
- reporting energy production and consumption
- estimating emissions from fuel combustion guideline reporting hydrofluorocarbons and sulphur hexafluoride gases
- petroleum-based oils and greases
- reporting uncertainty.

⁹ <https://www.cleanenergyregulator.gov.au/NGER/Pages/Forms%20and%20resources/Guidelines.aspx>