

More Data, Less Energy: Addressing Energy Waste in Networks



The 4E Standby Power Annex provides policy-makers with information, tools and policies to combat energy being wasted by electronic equipment in low power modes. This briefing looks at the enormity of energy waste in networks and how Governments might begin to address the issue with concerted global action. The information provided in this policy brief is drawn from two new Annex reports: *More Data Less Energy: Making Network Standby More Efficient in Billions of Connected Devices*, jointly published with the IEA and *Beyond Network Standby: A Policy Framework and Action Plan for Low Energy Networks*.

Key Messages

- **Currently 14 billion network enabled devices waste 400 TWh of electricity.** Using available efficiency measures savings equivalent to 133 mid-size coal fired power plants could be achieved.
- **By 2020 the number of network enabled devices will reach at least 50 billion** making addressing energy waste in networks an urgent global issue.
- **Concerted global policy action is needed** as the market drivers for improving efficiency are weak.
- **The IEA has called on governments to reduce energy waste** in network enabled devices by adopting the 3 measures recommended in the More Data Less Energy action plan.
- **A framework for governments developing policy to reduce energy waste** in network enabled devices has been proposed in the 4E report Beyond Network Standby.

A connected world

The world has quickly become connected with network enabled devices changing the way we interact at home and at work. The constant connection offered by devices has also changed the way they operate, with networked products always ready to send or receive information; they are never off. This results not only in constant connection but constant energy use, creating extra demand for electricity. It is estimated that there are currently 14 billion network enabled devices around the globe, accounting for 400 TWh of wasted electricity. The number of devices is predicted to rise to 50 billion by 2020, with associated electricity demand in 2025 expected to reach 1140 TWh per year. Most of this energy will be used not performing any function, but simply being alert in case a signal from the network arrives.

Accessing Annex outputs

All publically available documents produced by the annex can be accessed on the Annex website <http://standby.iea-4e.org> .

Solutions

Energy efficient technologies do already exist, for example mobile battery operated products demonstrate high efficiency with some products able to provide network services for virtually zero watts.

While non-mobile or tethered products have yet to reach the same level of efficiency, research suggests that by using best available technologies and solutions electricity demand from network enabled products could be cut by more than 60%.

Applying this scenario to current estimates, this would enable savings equivalent to 133 mid-size coal fired power plants with even greater savings available in the future.

Collectively the potential savings from network connected devices is very large but at an individual product level the benefits for the consumer is small. This absence of market drivers; the speed at which devices are becoming network enabled and the rapid growth in ownership, dictates the need for urgent policy action. Network enabled devices and the technology that drives them are globally traded commodities suggesting effective policy action should also be global and cooperative. As with the IEA 1 watt plan for standby, it is hoped that a similar global effort can be mustered to enable **More Data with Less Energy.**

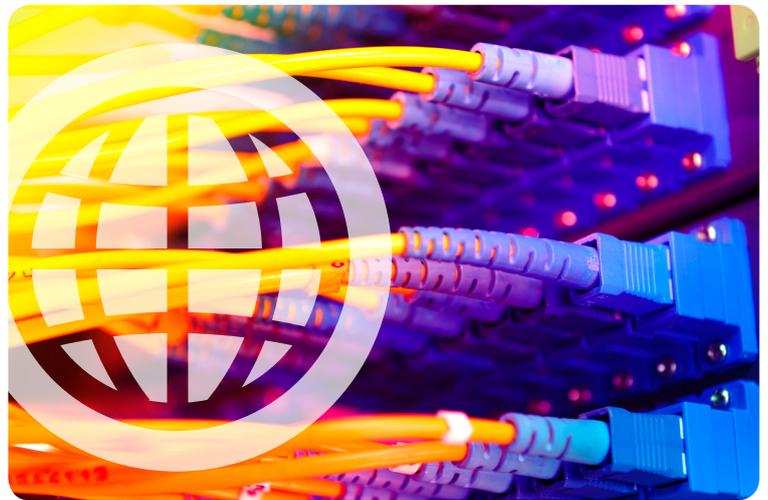
International Action Plan

The EU, Korea and the USA have begun implementing voluntary and mandatory measures addressing network enabled devices. International co-operation is also underway with the IEA, joining forces with 4E and the Clean Energy Ministerial SEAD initiative to develop an action plan to reduce energy waste in network enabled devices. The plan calls on governments around the world to adopt three measures:

1. Develop network enabled device policies with key energy efficiency objectives;
2. Intensify international co-operation to develop technical foundations for policy making in this area;
3. Work towards establishing and supporting international initiatives to promote energy efficiency in the broader context of digital economies.

In committing to these three measures it is anticipated that governments will pursue the following key actions:

- Assess, analyse and align existing policy approaches;
- Establish international technology standards;
- Engage with industry to allow policy that builds confidence and encourages innovation;
- Encourage the development of communication protocols that support energy efficiency;
- Prioritise data collection including alignment of methodologies.



Further Reading

The assumptions and details behind these measures and key actions can be found in the IEA and 4E publication *More Data Less Energy: Making Network Standby More Efficient in Billions of Connected Devices* available at www.iea.org/etp/networkstandby.

4E has also released a companion report *Beyond Network Standby: A Policy Framework and Action Plan for Low Energy Networks*. This report is designed to provide a detailed approach to developing policy for networks. The report explains the IEA guiding principles for good network design in terms of real world applications outlining the practical policy elements and approaches that are most relevant to each individual principle. Recommendations for definitions relating to networks and standardizing test procedures to support a successful policy environment are included. Along with Energy policy elements that can encourage and reward desirable attributes in real products. This report is available at <http://standby.iea-4e.org/documents-results/network-standby>.