Power consumption management on Cisco Video Collaboration Devices

Using data to get the most efficient power consumption in the organization

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webex by CISCO

Section 1 | Introduction

Webex Control Hub charts the power consumption of Cisco collaboration devices with up to 13 months of historical data and allows exporting of that data through reports. This provides an excellent source of information for organizations to enact their energy policies.

An organization can change settings to reduce power consumption and see the results of those changes in Control Hub. This document outlines the available options and their impact on power consumption.

This document shows how to:

1. Briefly describe the different power states of devices.
2. Understand the power consumption metrics from devices.
3. Estimate the Carbon dioxide equivalent emissions.
4. Reduce power consumption in the organization.

Understanding how power is consumed on Cisco devices.

Each device consumes different amounts of power depending on its hardware and software version and its level of activity. A detailed description of the different power consumptions states and their consumption level can be found on the Cisco Collaboration Devices Power consumption document

For the purposes of this document, we have the following simplified description of each power state:

Idle – The device is showing the home screen, a local share or whiteboard but it is not participating in a call.

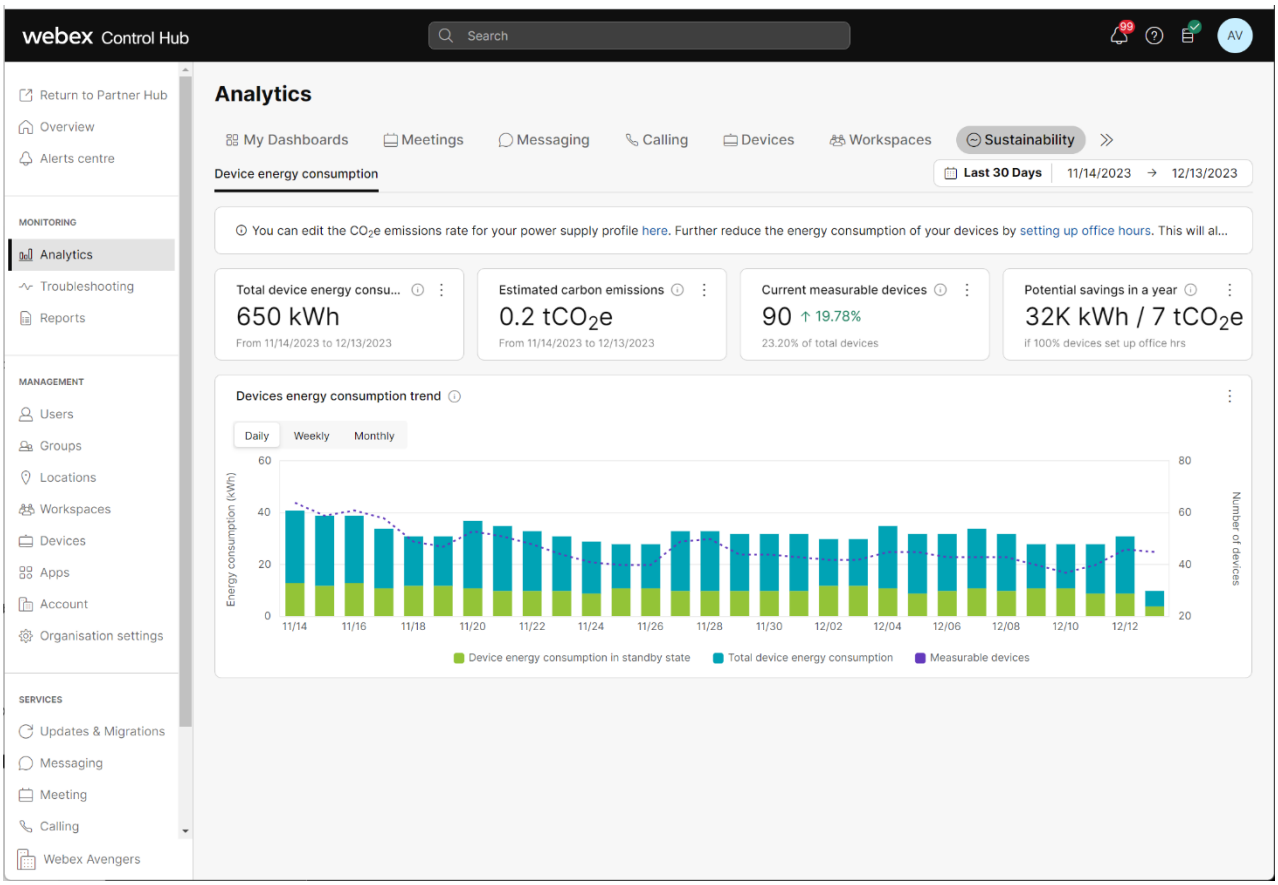
In call – The device is on a call. This is normally the most power consuming state.

Halfwake – The device shows the “Hello” screen or digital signage if configured.

Standby (can be either display off or networked standby) – The device shows a black screen it aims to consume the minimum amount of power possible.

Section 2 | Organization level power consumption metrics.

Control Hub shows a historic view of power consumption in the organization. To visualize this, go to: Analytics > Sustainability.

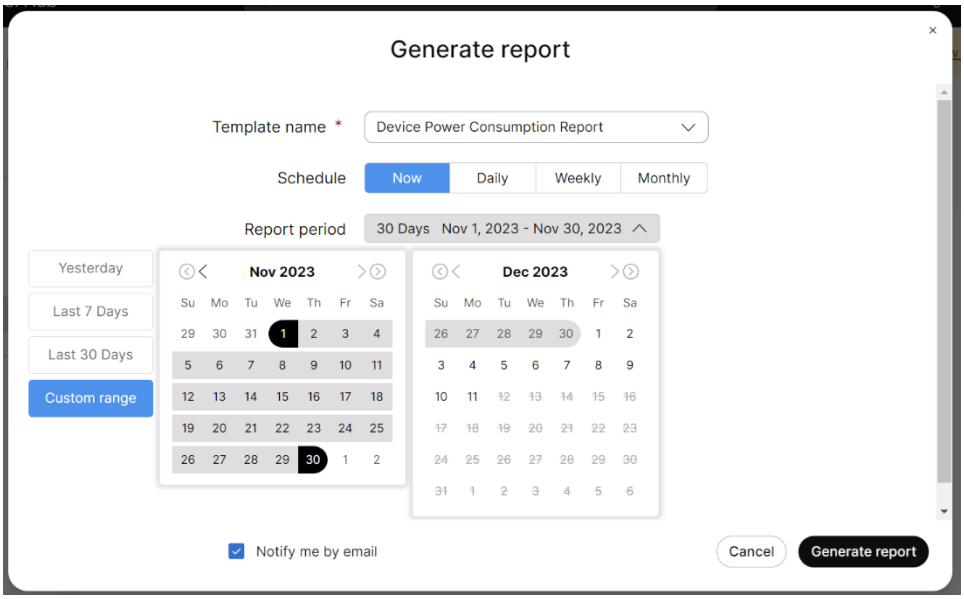


This chart displays total energy consumption and how much of that was in or out of standby for the sum of all the measurable devices. By default it displays the last 30 days of data but up to 13 months of data can be reviewed.

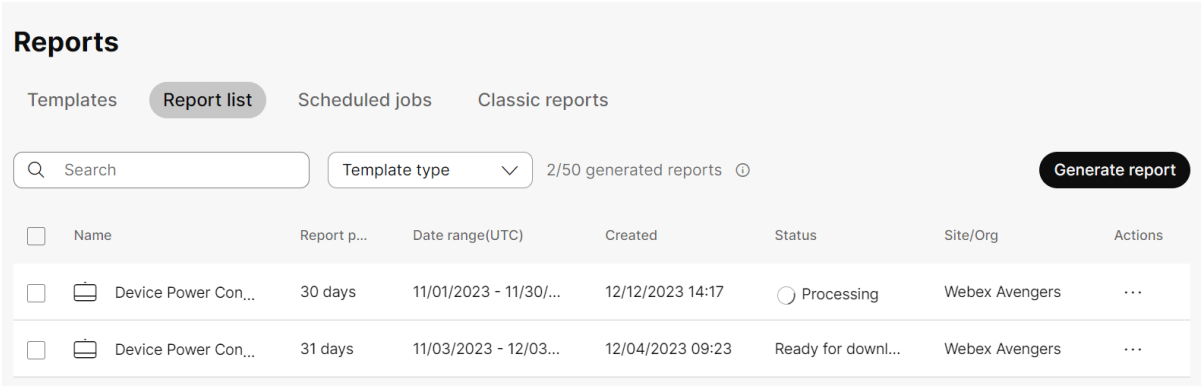
Total energy consumption is calculated as the sum of the power consumption for the measurable devices across all the states during the period for which it was measured.

Download the device power consumption report.

To download the power consumption report go to
Control Hub > Reports > Scheduled jobs > Generate report



Depending on the number of devices, the report may take some time, when ready it will appear on the Report list section of Control Hub



Advanced users can leverage our API integrations and download the reports directly using https://developer.webex.com/docs/api/v1/reports

Method		Description
GET	https://webexapis.com/v1/reports	List Reports
POST	https://webexapis.com/v1/reports	Create a Report
GET	https://webexapis.com/v1/reports/{reportId}	Get Report Details
DELETE	https://webexapis.com/v1/reports/{reportId}	Delete a Report

Understanding the power consumption report.

The report will include a list of all the devices, their location, the hours spent during each state of power consumption (In call, Idle, Halfwake, Display Off, Networked), the power consumption of that device in each state and the total power consumption during the selected period.
More information about the power states can be found here.

Device Name	Device Type	Location	Hours in Call mode	Power consumption in Call mode	Hours in Idle mode	Power consumption in Idle mode	Hours in Halfwake mode	Power consumption in Halfwake	Hours in Display Off mode	Power consumption in Display Off mode	Hours in Networked Standby mode	Power consumption in Networked	Total power consumption
Huddle room 1	Cisco Desk Mini	Oslo	0.32	6	0.72	9	24.18	291	5.11	34	677.64	4405	4.74
Executive Desk Pro	Cisco Desk Pro	Stavanger	1.51	81	8.9	445	0	0	38.58	695	0	0	1.22
Small Room 2	Cisco Room Bar	Bergen	0	0	0.65	6	94.44	775	18.99	133	201.86	1414	2.33
Old Huddle	Cisco Webex DX80	Trondheim	10.01	241	709.97	17821	0	0	0	0	0	0	18.06
Auditorium	Cisco Room Kit Pro	Molde	0	0	584	21316	0	0	0	0	0	0	21.32
													47.67

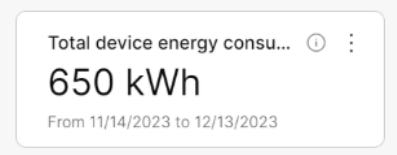
The “Hours in [xx]” columns specify the amount of hours a certain device has been in a particular [xx] state. In this table, the Desk Mini in Oslo has been in calls for 0.32 hours.

The “Power consumption in [xx]” columns specify the power usage in Watts during the time the device was in the [xx] state. In this table, the Desk Mini in Oslo consumed 6 Watts during the 0.32 hours of Calling. This makes sense, as we know from our Power Consumption documentation that Desk Mini consumes 17W/hour in Call. (17 * 0.32 = 5.44) Power consumption is rounded up to the next integer.

The Total power consumption column specifies the sum of the power consumed in all states. Note that this column is the only one in kilowatts (kW) while the other power columns are in Watts (W)

Based on this information, we can sum the total power consumption of all the devices to know the organization’s power consumption during the period of the report. In this case 47.67 kWh were consumed by these five devices from November 1st until November 30th. This is the sum of all the “Power consumption in” columns.

This value is reported in Control Hub under Analytics>Sustainability Key Performance Indicator, “Total device energy consumption.”

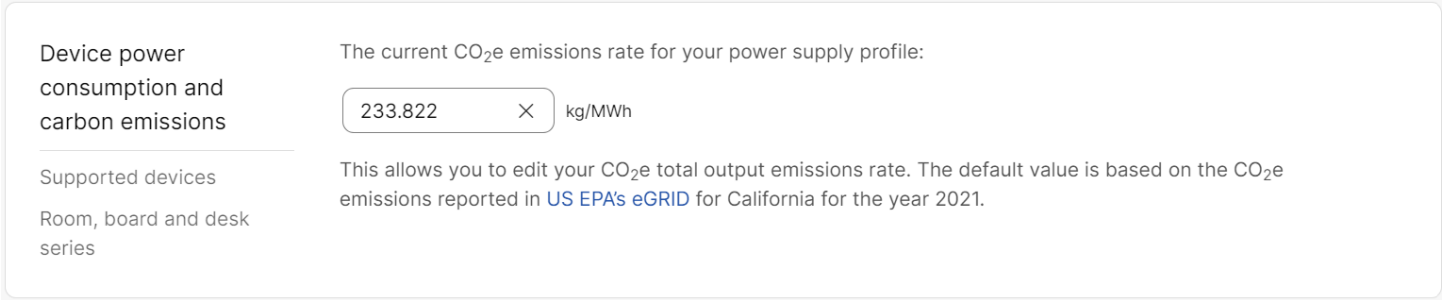


The power consumption report can also help show devices that are unnecessarily idle. For example, the Old Huddle room and the Auditorium seem to be in Idle state most of the time without ever going to standby. In the section Modifying the standby , it is described how to avoid devices being on while not used.

Section 3 | Estimating Carbon dioxide equivalent emissions.

To convert the power consumption to CO_2e generation Control Hub presents one total value for all the devices in the organization by multiplying the CO_2e emissions rate by the total power consumption.

To setup the CO_2e emissions rate, navigate to Devices>Settings>Device power consumption and carbon emissions:



Handling different CO_2e emissions rates

It is important to be aware that Power to CO_2e conversion factors depend greatly on how the electricity is generated on each region. For organizations that have devices across various countries and locations, either an average mix can be used, or a custom calculation can be made by using data from a Device Power Consumption Report exported from Control Hub.

In that case the best option would be to use the power consumption report to calculate each location's CO_2e emissions.

In this example we show the total estimated emissions using city specific emissions rates.

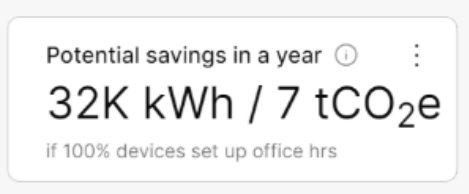
Device Name	Device Type	Location	Total power consumption	kg/MWh	kg CO2
Huddle room 1	Cisco Desk Mini	Oslo	4.74	233.822	1.108316
Executive Desk Pro	Cisco Desk Pro	Stavanger	1.22	150	0.183
Small Room 2	Cisco Room Bar	Bergen	2.33	200	0.466
Old Huddle	Cisco Webex DX80	Trondhein	18.06	180	3.2508
Auditorium	Cisco Room Kit Pro	Molde	21.32	280	5.9696
		Total	**47.67**		**10.97772**

In the United States, the conversion rates are published by the EPA on the eGRID website. In Europe, these rates are published by the EEA on their website. For rest of the world data: Electricity Maps.

Section 4 | Reducing power consumption in the organization.

Normal expected behavior is that the device consumes the minimum amount of power when not used but that it is also available whenever it is required to be used. More information about the standby states and their experience can be found on the Power consumption on Cisco Video Collaboration Devices document. However, organizations can set policies per device to better fulfill their needs and policies. The latest information around standby states and how to configure them is available at the Maintain and Operate Guides.

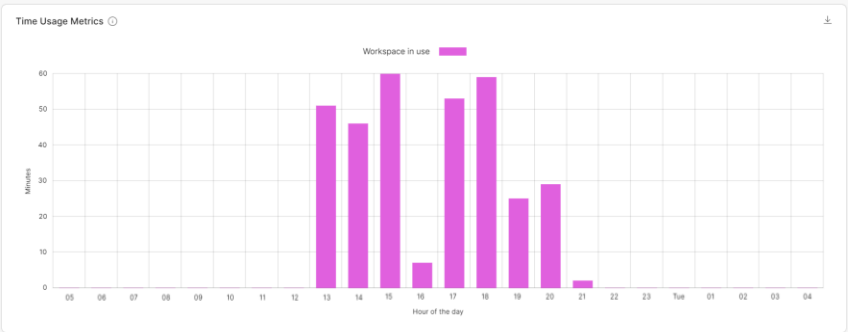
Potential savings in a year



The device Office Hours feature enforces standby mode during certain periods of the day/week. This metric calculates what estimated savings would be seen if devices were configured to be out of standby for 50 hours a week, vs no configuration of office hours. Your savings figure may differ based on the number of devices configured to use office hours and the number of hours they are configured to be active. To setup office hours follow these instructions. Note that the value shown as “potential savings” does not change based on the amount of devices that have enabled office hours, but on the amount of devices that are in the organization.

Enable office hours

The easiest way to avoid unnecessary power consumption in devices is to turn on office hours. By default, office hours is enabled between 7:00 am and 7:00 pm.



Using the information from our utilization metrics,
Workspaces > Real-Time Utilization Metrics > View details > Time Usage Metrics
the office hours setting can be optimized.
In this fictional organization, we have noticed that the office in Bergen tends to use the space only from 13:00 until 21:00 So it will make more sense to have office hours to be setup from 12:30 to 21:30. By applying these changes, we would reduce the active time of the device by 2 hours without affecting the experience in the workplace.

The organization can leverage the sensors in our devices to know when the different spaces are being used and create even more efficient policies.

Modifying the standby settings

The organization can further reduce power consumption in rooms that are used often but that the devices are not. For example, we can see on the power consumption report that the Old Huddle room and the Auditorium seem to remain in Idle state during the report time.

Enable standby and networked standby.

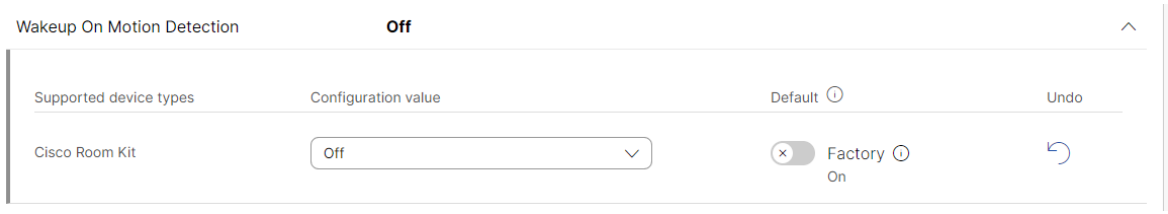
To enable devices to go to standby state Standby Control needs to be set to ON.
In our fictional example, it could be that the DX80 on the Huddle space has this setting OFF, preventing it from entering standby hence staying in idle mode. Once Standby Control is set ON, the DX80 will be able to go to standby.

Some devices can reach an even lower level of standby called Networked Standby. This is enabled by setting Standby Level Networked Mode ON. Networked standby is only available in newer generation devices, and it considerably reduces power consumption while remaining remotely manageable through Control hub.

The time it takes to automatically go into standby is determined by the Delay settings: Standby Level Networked Delay and Standby Delay.

Disable wakeup on motion detection.

If the room is mostly used outside of meetings, it makes sense to avoid the device waking up on motion detection. This means that the device will remain in Standby mode until the user touches the navigator screen or the integrated touch screen.



By applying that in a room like the Auditorium, the organization could save the power the Codec Pro and the peripherals like camera and screens are consuming.

Power efficiency is not just about the Cisco device.

With our certified partners, Cisco devices can set screens to standby mode using CEC. This would result in ever higher energy savings than those shown in Control Hub. For example, if we have the same Room Bar in Bergen connected to two Samsung QMC75 screens, when the Cisco Bar goes out of office hours into Networked Standby, it will instruct the screen to change to Sleep Mode. Based on Samsung's datasheet, the power savings would be from 214.5W in On Mode to 0.5W in Sleep Mode. Resulting in savings of 214 Watts per hour per screen. So even though the savings of the Bar from idle to standby seem low, the whole room system has savings of over 400 W per hour.

The savings can even expand depending on the location. For example, if the devices were in California, where the AC needs to be ON to keep the office cool, by using efficient power policies, the AC is also relieved from using energy to cool down a room which is not being used. The integration can go further, using our room booking solution and macro integrations.