Code Blue®

SOLAR-POWERED SOLUTIONS

RESOURCE GUIDE

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Introduction

Welcome to our comprehensive guide on Code Blue's solar-powered products, designed to empower you with clear, accurate information about the benefits and capabilities of solar technology. As the world shifts towards sustainable energy solutions, understanding solar power can seem daunting amidst a sea of misconceptions and conflicting information. This guide aims to demystify solar offerings, providing insights into various products, their functionalities, and real-world applications. Whether you're considering a solar-powered Help Point® for your property or just looking to better understand how these options can be beneficial for a multitude of applications, our goal is to equip you with the knowledge you need to make informed decisions and embrace the advantages of renewable energy.

Tips for Using Solar Power

From technological advances to a desire to be more environmentally conscious, interest in solar power options isn't waning anytime soon. That enthusiasm even extends to the world of emergency communication.

Code Blue offers a 180-watt solar array module that can be used to operate emergency speakerphones, Audio Paging Arrays, LED beacon/strobes, faceplate lights & more!

While Code Blue's solar option can be used virtually anywhere, here are some tips that will help you enjoy the long-lasting environmental and economical benefits that come with the Code Blue products that utilize solar power.

Adjust the Angles

Solar panels still have the ability to generate power even if light has been diffused by clouds, but locations that experience regular snowfall should routinely adjust the tilt of the panels to avoid the accumulation of precipitation that can block sunlight.

Be Aware of Your Surroundings

Buildings, trees and other structures that create shade or shadows will have a detrimental effect on your solar potential. Even temporarily blocking direct sunlight can have a negative impact.

Check the Batteries

The solar panels are attached to run and maintain Valve Regulated, Gelled-Electrolyte batteries that are used to operate the unit's speakerphone and LED beacon/strobe and faceplate lights. Extreme heat and cold can impact the charging capabilities of the batteries that run the unit. Test these regularly to ensure they are performing properly.

Examine the Components

Checking battery connections for corrosion and proper connections and annually replacing the batteries will help ensure performance isn't affected.

Regularly Clean the Panel

Solar panels require little maintenance, especially if they are tilted, as rain can wash away debris. It's generally recommended to clean solar panels two to four times a year. If the panels are in an area with high dust, pollen, or dirt, they may need to be cleaned more often. During winter months or in snowy climates, regularly check the panel & remove any accumulated snow that may be on it.

By doing the proper homework and proactively performing regular maintenance, all regions, including areas with inclement weather or intermittent sunshine, can enjoy a green solution for providing help at the touch of a button.

Overview

In the rapidly evolving world of solar power, confusion and misinformation is all too common. Despite the growing adoption of solar technology, many individuals and businesses still grapple with misunderstandings about its benefits, efficiency, and installation processes. This section aims to dispel prevalent myths and provide clear, accurate information about solar power, ultimately highlighting how Code Blue stands out from the competition in this space.

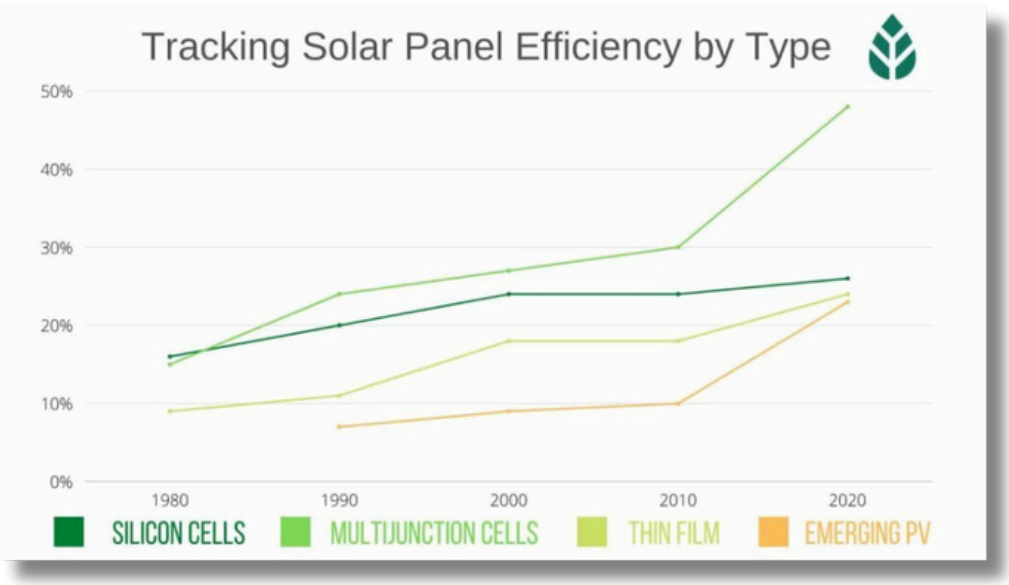
Common Misconceptions About Solar Power

While there are likely too many pieces of inaccurate information to list related to solar-powered products, the following topics are some of the most common concerns and objections that are consistently brought up when helping a customer design a Help Point® ecosystem.

Solar Panels Aren't Efficient

One major area of confusion surrounds the efficiency of solar panels. A common myth is that solar panels are ineffective on cloudy days or in less sunny climates. While it's true that solar panels generate less electricity in low-light conditions, modern technology ensures they remain productive even under such circumstances. Advanced photovoltaic cells can capture and convert diffuse sunlight into energy more efficiently than ever before.

The efficiency of solar panels and the technologies behind them have vastly improved over the years, most notably since 2010. Advancements in materials used to manufacture solar panels, as well as better scientific understandings of how to best harness solar energy, have had a transformative impact on the landscape of solar-powered technology and its uses in society.

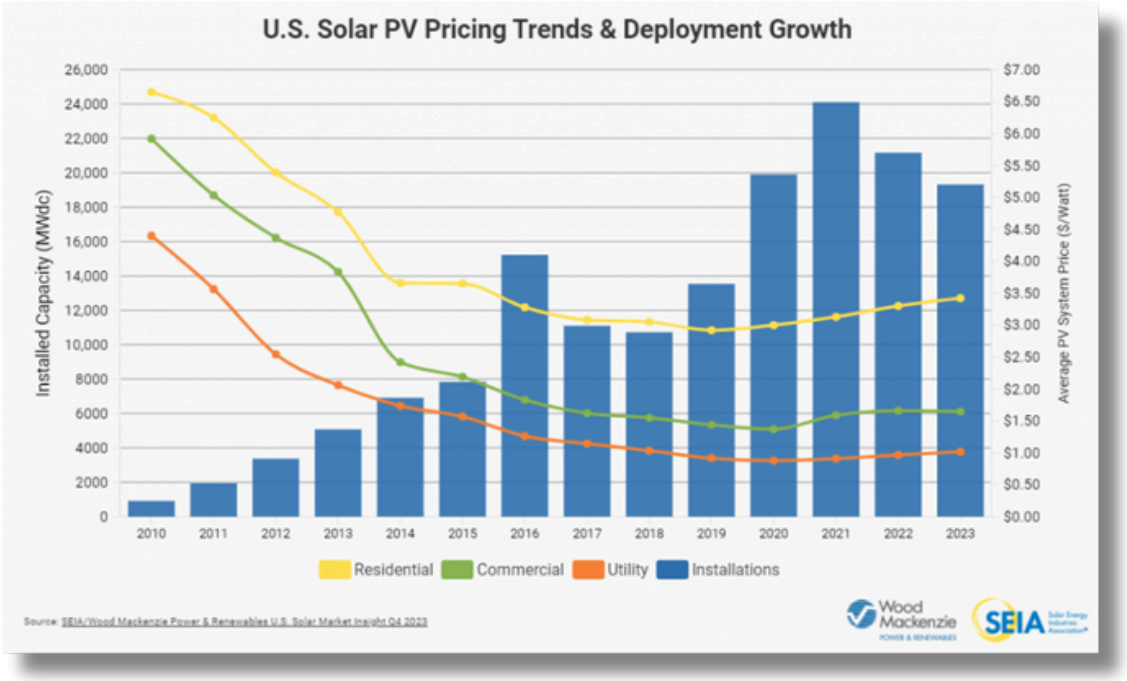


Source: https://www.ecowatch.com/solar/solar-panel-efficiency-over-time

Solar Power Technology is Expensive to Install

Another prevalent misunderstanding is the belief that solar power systems are prohibitively expensive. While the initial investment for solar panels and installation can be substantial, the long-term savings on electricity bills, coupled with various government incentives and rebates, often make solar power a cost-effective option. Moreover, the price of solar technology has been steadily decreasing, making it more accessible to a wider audience.

Code Blue's solar products are typically paired with cellular IP communication equipment, allowing your Help Point® ecosystem to be less expensive, quicker to deploy, and much more flexible than installs that require buried conduit to accommodate fiber or copper network and power cabling.



Solar Panels are a lot of Maintenance

A third common misconception is that solar panels require a lot of maintenance. In reality, solar power systems are quite low-maintenance. They are designed to withstand various weather conditions and only require periodic cleaning and inspections to ensure optimal performance. The longevity and quality of the batteries used in solar-powered systems have also improved immensely and continue to do so day by day.

Summary

As you can see, many of the fears stemming from solar-powered devices are either based on outdated information or a misunderstanding of the capabilities of current solar-powered systems. Solar panel technology has evolved significantly in recent decades, with advances in manufacturing techniques, new materials, greater solar cell efficiency, and flexible designs. Considering the availability and proven performance of solar panels and cellular IP services in the security industry, these methods of infrastructure connectivity for remote communication and IoT devices are widely accepted and growing... FAST!

Our Approach to Solar Power

At Code Blue, we recognize that these misconceptions can hinder the adoption of solar technology. Our mission is to provide clear, accurate information and high-quality service to guide our clients through the solar power journey. Here's how we differentiate ourselves from competitors:

Transparency and Education

We prioritize educating our customers about solar power and its role in the world of emergency communication, by addressing their concerns with clear, factual information. Our comprehensive explanations ensure that potential customers understand the real benefits and limitations of solar energy, allowing them to make informed decisions.

Tailored Solutions

Unlike many competitors who offer one-size-fits-all solutions, we provide multiple solar power system options designed to meet the specific needs of each client. We also offer highly customizable products that can be designed to meet the exact aesthetic you need.

Cutting-Edge Technology

We stay at the forefront of solar technology advancements, ensuring that our customers benefit from the latest innovations. Our partnerships with leading manufacturers allow us to offer high-efficiency solar panels and state-of-the-art components that maximize energy production and savings.

Comprehensive Support

From the initial consultation through installation and beyond, we offer ongoing support for all of our customers. Our dedicated Customer Service and Technical Support teams are available to address any questions or concerns, ensuring a smooth and satisfactory solar power experience.

Commitment to Quality

We adhere to the highest standards of quality in both our products and services. Our production process is thorough and stringent, and all product designs comply with relevant regulations and standards.

Comparison to the Competition

Solar-Powered Towers

The comparison chart below shows how Code Blue's CB 1-w solar-powered Help Point® Tower stacks up against four competitors in the solar-powered emergency communications market.

Product Feature	Code Blue CB 1-w	Competitor A	Competitor B	Competitor C	Competitor D
Solar Panel Wattage	**180W**	45W	40W/90W	30W	145W
Battery Array	**2x 12V 73.6Ah**	1x 12V 42Ah	2x 12V 42Ah	1x 12V 18Ah	1x 12V 90Ah
Battery Capacity	**147Ah**	42Ah	84Ah	18Ah	90Ah
Battery Technology	**Photovoltaic Sealed Gel**	Not specified	Not specified	SLA	Not specified
Operating Temperature	**-40° to 140° F**	Not specified	-40° to 131° F	Not specified	-40° to 140° F
Enclosure Material	**0.134" Carbon Steel**	"Steel"	0.125" Aluminum	"Steel"	0.125" Steel
Enclosure Finish	**Automotive Grade Multi-Layer**	Powder Coat	Multi-Layer Finish	Powder Coat	Powder Coat
Audio Paging Option	**360° Speaker Array**	N/A	N/A	N/A	N/A
Cellular Connectivity	**AT&T, T-Mobile, Verizon, US Cellular Bell, Rogers, Telus**	AT&T & Verizon	AT&T	N/A	AT&T & Verizon
4G LTE/5G Services	**4G LTE & 5G Options**	4G LTE	4G LTE	N/A	4G LTE
Cloud Connectivity	**Nebula Platform**	N/A	N/A	N/A	N/A
Warranty	**Electronics: 2 Years Tower: 5 Years (7 Years w/ clear coat finish)**	1 Year	Electronics: 2 Years Tower: 5 Years	1 Year	2 Years
Certification(s)/Listing	**UL 62368-1 / CSA C22.2 No. 62368-1**	None Specified	UL 60950-1 & 60950-22	"UL/cUL Listed Outdoor"	None Specified

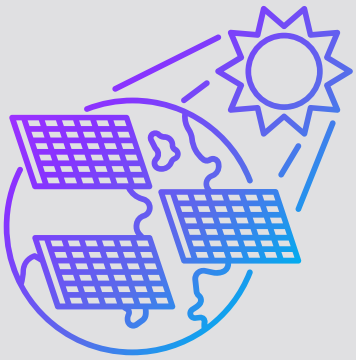
Remote/Wall-Mounted Solar Power Applications

The comparison chart below shows how Code Blue's 12V & 24V Solar Power Plants stack up against similar offerings from the same four competitors used in the previous chart.

Product Feature	Code Blue 12V Power Plant	Code Blue 24V Power Plant	Competitor A	Competitor B	Competitor C	Competitor D
Solar Panel Wattage	**180W**	**400W**	45W	40W/90W	30W	85W or 145W
Battery Capacity	**12VDC, 216Ah**	**24VDC, 137Ah**	42Ah	84Ah	18Ah	Not specified
Battery Technology	**Photovoltaic Sealed Gel**	**Photovoltaic Sealed Gel**	Not specified	Not specified	SLA	Not specified
Operating Temperature	**-40° to 140° F**	**-40° to 140° F**	Not specified	Not specified	Not specified	Not specified
Enclosure Material	**Aluminum**	**Aluminum**	"Steel"	Not specified	Not specified	Aluminum
Enclosure Finish	**Powder Coat**	**Powder Coat**	Powder Coat	Powder Coat	Powder Coat	Powder Coat
Cellular Connectivity	**AT&T, T-Mobile, Verizon, US Cellular Bell, Rogers, Telus**	**AT&T, T-Mobile, Verizon, US Cellular Bell, Rogers, Telus**	AT&T & Verizon	AT&T	N/A	AT&T & Verizon
4G LTE/5G Services	**4G LTE & 5G Options**	**4G LTE & 5G Options**	4G LTE	4G LTE	N/A	4G LTE
Cloud Connectivity	**Nebula Platform**	**Nebula Platform**	N/A	N/A	N/A	N/A

Why choose Code Blue Help Points® with solar panels and cellular IP?

Because Code Blue can help you create an entire public safety ecosystem that is cost effective, quick to deploy, & more flexible than hardwired configurations. Additionally, Code Blue solar-powered Help Points® with cellular IP capabilities include components that are carefully designed and tested to deliver industry-leading performance and reliability.



Solar Panels

Solar Panel (Power) adoption is growing worldwide. DTE Energy (NYSE: DTE) is a Detroit-based diversified energy company involved in developing and managing energy related businesses and services nationwide. DTE has big plans to add even more solar energy to the grid, the least expensive way to provide all Michiganders with access to solar.

The advantages of solar include remote, no-grid, power source, sustainability (an important topic for many customers), low maintenance, quick installation, and reliability. From a solar panel perspective, countless companies in security, such as remote surveillance manufacturers, use solar.

Cellular IP

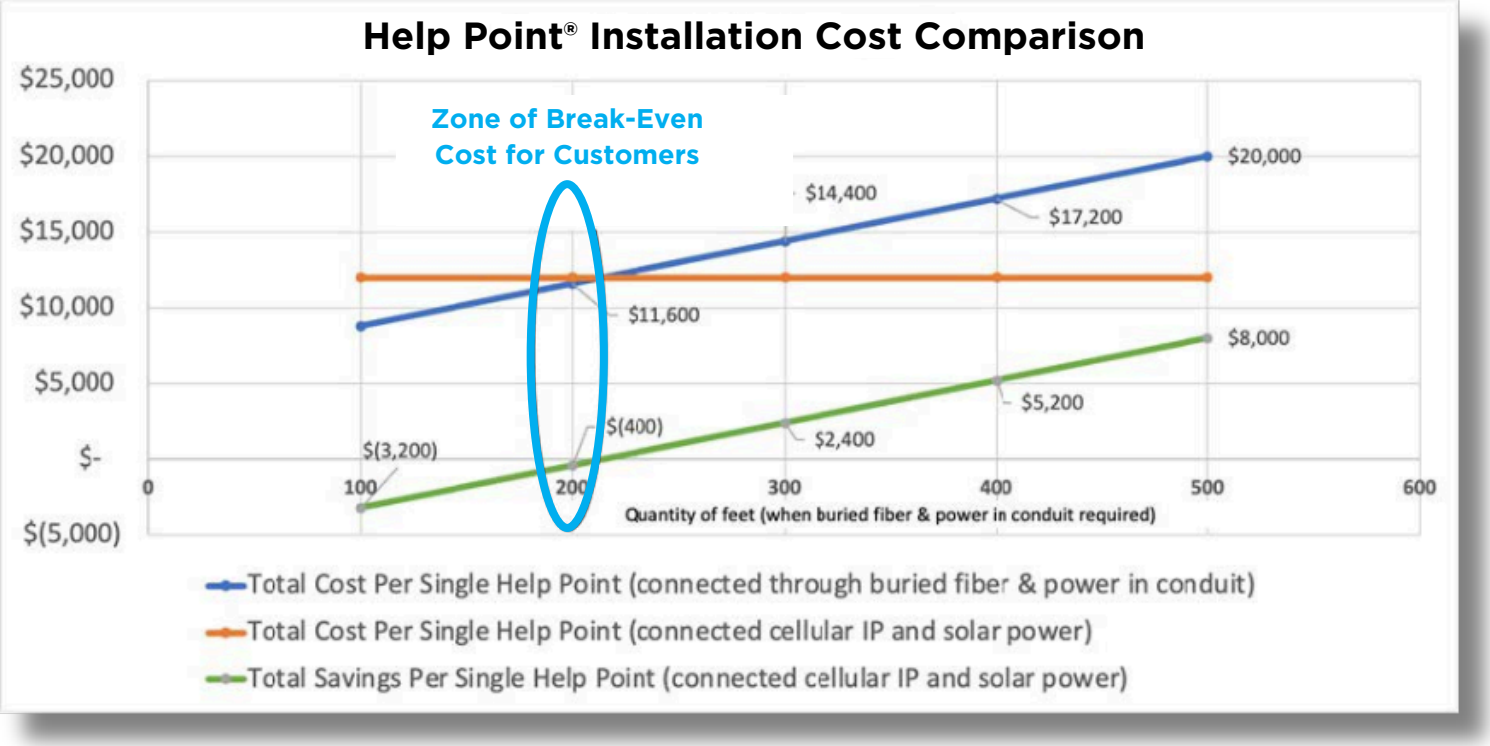
Cellular IP offers coverage where traditional wired connectivity might be challenging or not cost-effective. Cellular IP can serve as the primary means of connectivity, as a backup, or to augment existing connections that use multiple pathways, including cellular, for robust, fail-safe connectivity; which is one of the primary reasons Code Blue suggests this form factor.

Scalability is essential to any size network. Cellular IP data channels can handle multiple Help Points® and is a quick and easy way to connect multiple locations. By using Cellular IP, many of the North American corporations that we work with do not need a dedicated WAN to connect their locations and operate as one.

The cellular IP technologies that Code Blue utilizes come with built-in encryption and security features, making the data transmitted over them secure. Cellular IP (including VoIP) trends and benefits are discussed widely on the internet across all industries and organizations. Verizon has stated, “Since it’s all in the cloud, VoIP service provides access to advanced communications features that can help you improve productivity and performance.”

The Bottom Line

Getting to the bottom line – without considering the additional benefits of cellular IP and solar-powered Help Points. Code Blue estimates that the zone of break-even cost for customers crosses over to favor cellular IP and solar power connectivity. The savings geometrically increase after approaching ~200' from a Help Point to a source for buried cable and power (see chart below).



Other Factors to Consider

The alternative to Help Points® with solar panels and cellular IP is fiber and power cabling buried in conduits. Customers or integrators must consider many factors to support proper installation, compliance, and performance attributed to this method, including:

- Labor availability, which may impact project scheduling.
- The type of cable buried. For instance, fiber optic cables might be more expensive than copper cables.
- Conduit material has different grades and types, with varying costs.
- The depth at which the conduit must be buried.
- Rocky or challenging terrains (crossing water, roads, walkways, preserves, hills).
- Labor rates vary by region and by the expertise required for the job.
- Additional permitting fees or other regulations that can add to the cost.
- After-effects: some customers experience disturbed areas that need restoration (landscaping, unplanned trenching, natural ground shifts).

CB 1-w Solar Tower Product Details

Product Description

The **CB 1-w** is able to be powered and connected almost anywhere. The high-intensity LED beacon/strobe light provides exceptional visibility, giving a presence of public help, and this Help Point® acts as a deterrent to potential crime. This blue light emergency tower provides direct communication with first responders and provides optimum performance and reliability in almost any geographic location, including areas where power and phone lines are not available.

Standard Features

- Durable steel construction
- Trademarked cylindrical design
- 9.75 feet tall
- 12.75” diameter
- LED faceplate light
- Solar Photovoltaic (PV) Gel batteries

Optional Features

- Dual faceplate openings
- Hearing loop device
- Solar audio paging

Solar Benefits

- Efficient power delivery even in shady or challenging weather conditions
- Long battery lifecycle and panel life
- Over 2,000 Wh (watt-hours) of energy storage in battery bank
- High-efficiency solar cells = maximum power output circuits protected by hydraulic-magnetic breakers to provide protection at extreme temperatures

CB 1-w Solar Tower Product Details

CB 1-w Technical Features

Pedestal Specifications

- **Height:** 9.98′ (304.19 cm)
- **Weight:** 400lbs (181.44 kg)
- **Diameter:** 12.75″ (32.38 cm)
- **Material:** 0.135″ (10 gauge) steel
- **Access doors:** 14.00″x9.64″ (35.56 x 24.49 cm)
- **Standard Power:** Solar Power Assembly, 12V DC Output

Communication

- **Speakerphone Options**
  - **LS1000/LS2000:** Full Duplex, SIP Compatible VoIP Phone.
  - **IA4100**: Analog full duplex phone.
- **Connection Options**
  - **Hardwired**
  - **Cellular**
  - **IP Wireless**

Solar Module

- **Power Output:** 180W
- **Length:** 59.06″ (150 cm)
- **Width:** 26.5″ (67.5 cm)
- **Depth:** 1.38″ (35 mm)
- **Voltage @ Pmax (Vmp):** 19.44 V
- **Max Current (Imp):** 9.26 A
- **Number of cells:** 36
- **Weight:** 26.46 lbs (12.0kg)

Lighting

- LED faceplate light
- Beacon/strobe

Style

- **Standard wet coat paint options:**

Safety Blue, Safety Yellow, Safety Red, Gloss White, Bright Silver, Tiger Orange, Midnight Blue, Gloss Black, Dark Bronze, Cardinal Red, Medium Bronze, British Racing Green, Architectural Gray, & Oak Buff.

- **Standard Graphics text options:**

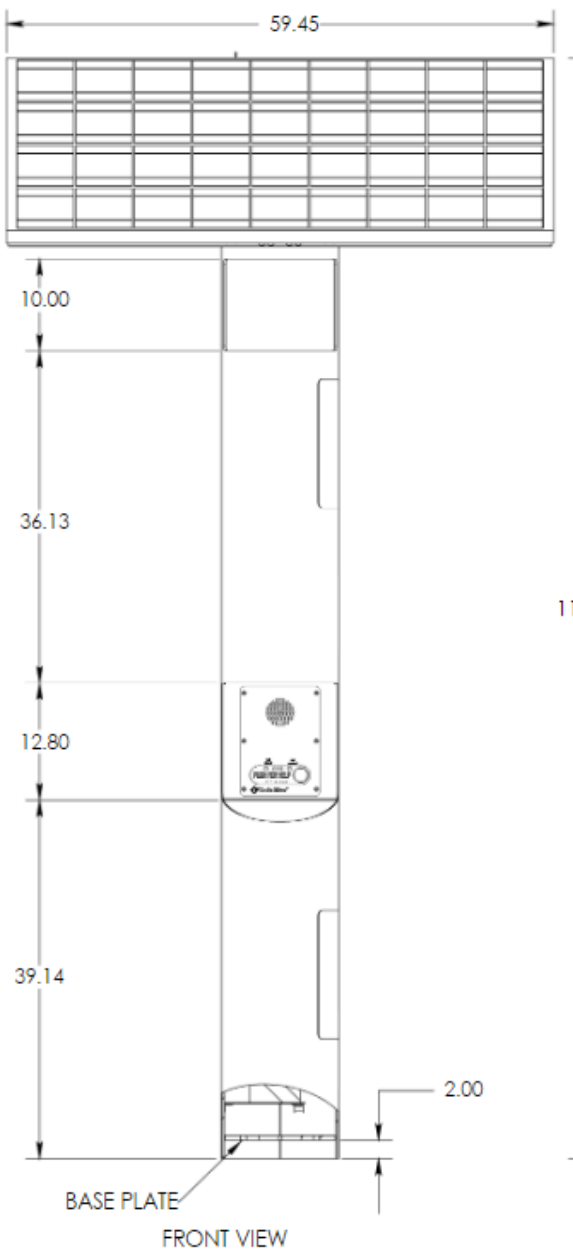
Emergency, Assistance, Help Point, Police, Courtesy, Security, Information

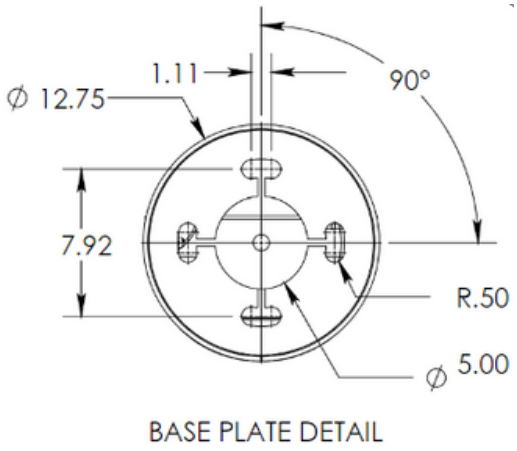
- **Standard Graphics text colors:**

White, Black, Blue, Red, Green, Yellow, Orange, Purple, & Brown

Compliance

- UL 62638-1
- Built to NEMA 3S Specifications
- Designed to ADA Specifications





Note: Specifications subject to change without notice or obligation on the part of Code Blue Corporation.

Solar Power Plant Product Details

Compatible Code Blue Help Points®

- **CB 2-a** Signature Wall Mount Enclosure
- **CB 2-e** Economy Wall Mount Enclosure
- **CB 4-r** Signature Call Box
- **CB 4-s** Standard Call Box
- **CB 4-u** Utility Wall Mount Enclosure
- **CB 5-s** Slim Economy Tower
- **CB 5-p** Slim Economy Tower (Short)
- **CB 6-s** Faceplate Speakerphone Enclosure
- **CB 9-s** Gatekeeper Pedestal (Car Height)
- **CB 9-t** Gatekeeper Pedestal (Truck Height)

Product Description

Bring the efficiency, flexibility, and reliability that Code Blue delivers with the CB 1-w solar-powered tower to almost any Code Blue Help Point® by using a **Solar Power Plant**. Perfect for sites where trenching may not be practical or installation of a traditional 9′ tower may not be possible, a Solar Power Plant provides a solution for almost any environment that can be connected to a variety of different enclosure types. The Solar Power Plant is a proven product that can withstand harsh weather and extreme temperatures to help deliver communication when and where it is needed most.

Standard Features

- Durable powder-coated equipment enclosure.
- Stainless steel & aluminum hardware.
- System can be pole or wall-mounted.
- Adjustable solar panel tilt angles from 30-60 degrees.
- High Wind Brace included.
- Available in 12VDC or 24VDC output options.

Solar Benefits

- Efficient power delivery even in shady or challenging weather conditions.
- Long battery lifecycle and panel life.
- Over 2,500Wh (watt-hours) of energy storage in battery bank.
- High efficiency solar cells = maximum power output circuits protected by hydraulic-magnetic breakers to provide protection at extreme temperatures.
- Reduced installation costs and time by eliminating the need to trench and run power cabling.

Common Applications

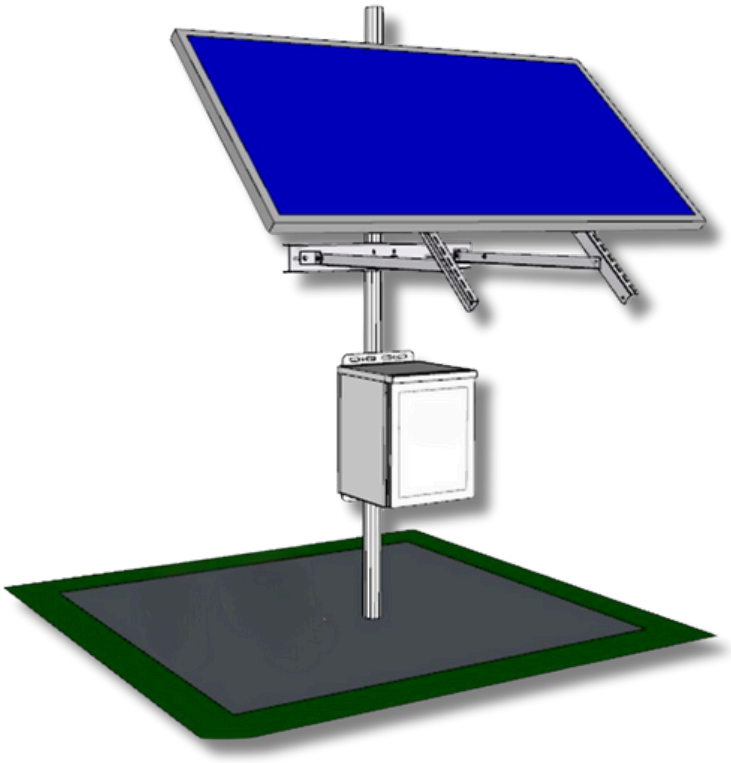
- Beaches
- Bridges
- Overpasses
- Parking Garages
- Parking Lots
- Transit Stations

Solar Power Plant Technical Features

Category	Specification	12 VDC Configuration	24 VDC Configuration
OVERVIEW	System Voltage (Handoff)	12 VDC	24 VDC
	Total Weight	218 lbs	272 lbs
SOLAR ARRAY	Minimum Solar Array Power	180 W	400 W
	Maximum Power Current	11.9 A	12.9 A
	Dimensions(H x W x D)	63.6 x 27.8 x 1.4 in	67.8 x 44.7 x 1.4 in
	Weight (including mount)	48 lbs	72 lbs
ENVIRONMENTAL	Working Temperature	-40°C - 60°C	
	Working Humidity	20 - 95% RH non-condensing	
ENCLOSURE	Dimensions(H x W x D)	20.25 X 16 X 15 in	27.875 X 16 X 15 in
	Weight (Empty)	21 lbs	30 lbs
	Finish	Polyester Powder Coat - White	
	Fastener	Stainless Steel Draw Latch with Pad-lockable Hasp	
	Environmental Rating	NEMA 3X	
	Mounting	Pole / Wall	
BATTERY ARRAY	Array Total Energy Storage	2592 Wh	3288 Wh
	Array Voltage (Nominal)	12 VDC	24 VDC
	Array Capacity @ C100	216 Ah	137 Ah
	Chemistry	Sealed Thixotropic Gel VRLA	
	Quantity	2	2
	Weight (Total)	140 lbs	170 lbs

Kit Contents

- Solar Panel
- Solar Panel Mount Assembly
- Powder-Coated Aluminum Enclosure
- Charge Controller
- Battery Array



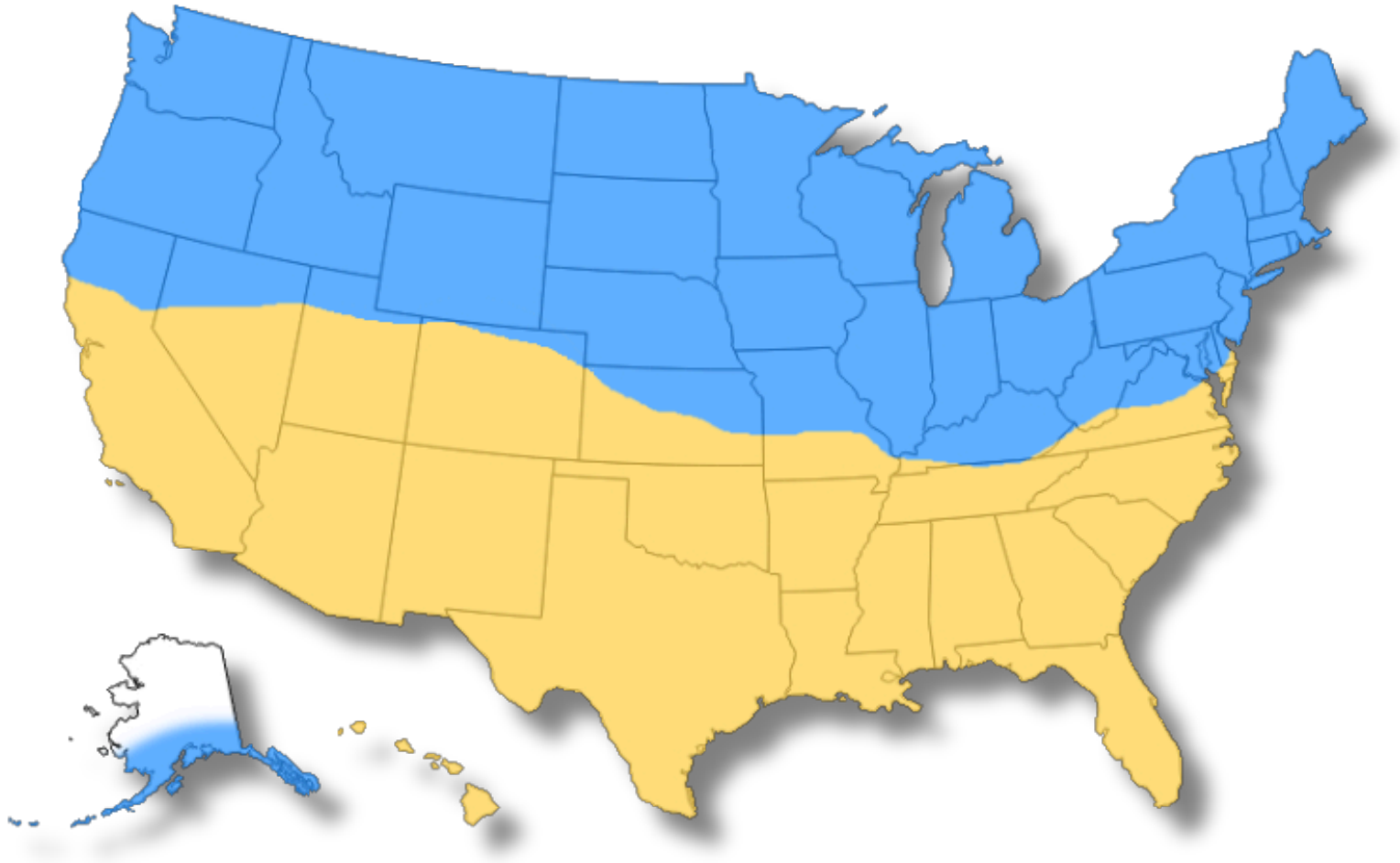
Note: Specifications subject to change without notice or obligation on the part of Code Blue Corporation.

Solar Power Plant Ordering Information

As detailed on the previous page, Code Blue offers Solar Power Plant with outputs of either 12VDC or 24VDC, which are accompanied by differing energy storage capacities. Knowing which model you need, based on the installation location, is a crucial starting point for picking the right product. The map below can be used as a guide to help determine which solution is best for your application.

- 12V DC Solar Power Plant

- 24V DC Solar Power Plant



Source: Solis Energy, Inc.

Note: Specifications subject to change without notice or obligation on the part of Code Blue Corporation.

Solar Audio Paging Product Details

Product Description

The **Solar Audio Paging System** for our CB 1-w Solar Help Point® provides a solar-powered audio unit with 6 speakers for a 360° audio coverage to deliver a very high-powered speaker system for mass notification and two-way communication.

Standard Features

- Solar power delivery with 180W solar panel.
- Increased audio coverage with 6 speakers for a 360° circumference.
- Frequency range of 450-8000 Hertz.
- Filters out low frequency noises and reduces ambient noise distortions.
- Full range 20 to 20kHz Bandwidth Programmed to support voice range.
- Input audio gain adjustment at the amplifier.

Solar Audio Paging array installed on a CB 1-w tower.

Solar Benefits

- Efficient power delivery, even in shady or challenging weather conditions.
- Long battery lifecycle and panel life.
- Over 2,000 Wh (watt-hours) of energy storage in battery bank.
- High-efficiency solar cells = maximum power output circuits protected by hydraulic-magnetic breakers to provide protection at extreme temperatures.

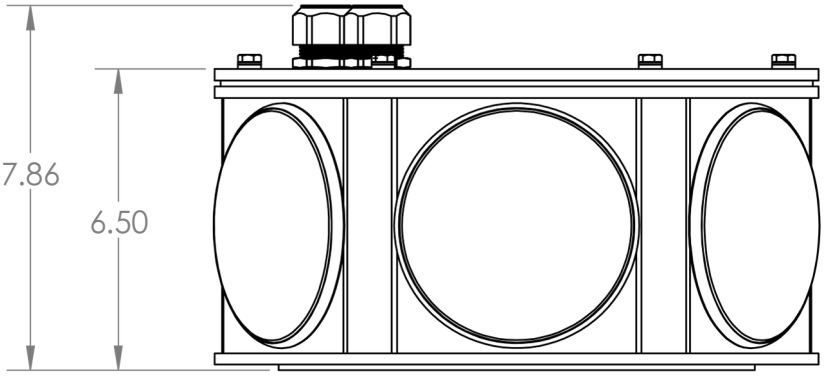
Compatible Code Blue Help Points®

- **CB 1-w** Solar Tower

Solar Audio Paging Technical Features

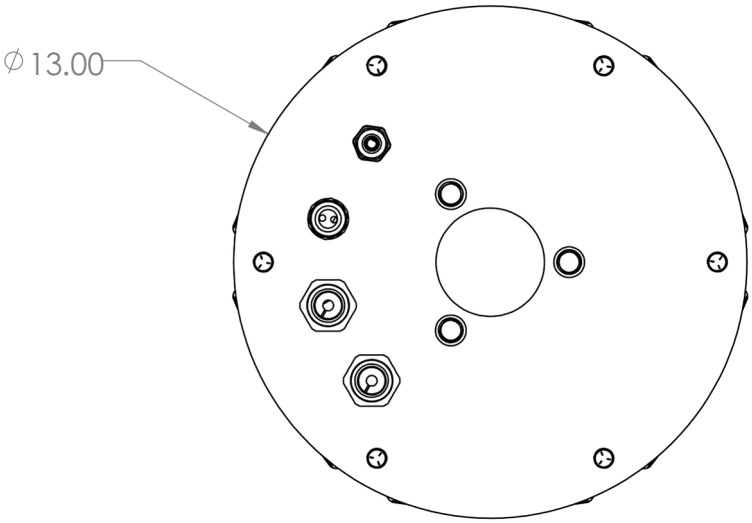
Specifications

- **Height:** 6” (15.24 cm)
- **Width:** 13” (33.02cm)
- **Weight** (entire unit): 37 lbs.
- **Install weight:** 28 lbs.
- **Speakers:** 6
- **Material:**
  - **Speakers:** Acrylic cloth
  - **Housing:** Carbon Steel
- **Power:** 12V DC - From Solar-Powered System
- **Power Range:** 15 W per speaker (90 W total)



Speakers

- **Size:** 5” Diameter (12.7 cm)
- **Power Capacity:** 15 W
- **Impedance:** 8 Ohms per speaker
- **Frequency Response:** 400-8000 Hz
- **Frequency Range:** 450 - 8,000 Hz
- **Resonant Frequency:** 726 Fs



Amplifier

- **Load Resistance:** 2.4 ohms
- **Output Power:** 1x100 (20Hz-20kHz, 0.1% THD)
- **Maximum Output Power:** 100 (20Hz-20kHz, 1% THD)
- **Distortion:** 10%
- **Signal to Noise:** 102 dB
- **Sensitivity:** 102 dB SPL

Style

- **Standard wet coat colors:** Dark Bronze, Gloss White, Gloss Black, Safety Blue, Safety Red, Safety Yellow, Bright Silver
- **Custom colors available**