

# PatientEarth

How hospitals can profit from sustainability

# About SION60

**SION60's mission is to help hospitals reduce energy use and pollution at a low cost with a return on investment (ROI).**

Our practical tools make it simple to reduce your carbon footprint, manage your sustainability strategies, and get your leadership on board by demonstrating measurable results and return on investment (ROI).

Some of our purpose-built tools include:

- CarbonEMR™, the first carbon accounting and reduction software platform built specifically for healthcare systems
- More than 75 projects you can implement from Day 1 — without hiring expensive consultants and engineers
- Reporting capabilities that align with key funding programs for carbon reduction, while pleasing your CFO.

Most of all, our tools and services are backed by decades of consulting, health IT and C-suite experience, all dedicated to helping you help the Earth.

 [sion60.com](https://sion60.com)

## About the Author

Andy Draper is a second-generation hospital administrator, and has been a health technology leader for 23 years. He holds a PhD from the University of Texas School of Public Health.

Andy is passionate about healthcare — and about protecting our planet. He's led sustainability initiatives at a large health system, generating millions of dollars in rebates and cost savings. He also has leadership experience in three start-up companies, and is the founder of greencio.org.

Through formal protocol training and hands-on implementation, Andy is familiar with assessments and plans to meet city, state, and federal energy use regulations. He is currently working on the framework for a “green ICU” with hospitalists and with the American Medical Informatics Association on its Climate Workgroup.

He's spreading the sustainability message to thousands of healthcare leaders through presentations, publications — and with this playbook — because the Earth needs climate action now.

You can contact Andy at [andydraper@sion60.com](mailto:andydraper@sion60.com).

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## How to use this e-book

Climate change is an urgent problem, and healthcare organizations are well-positioned to have a significant impact if we audit and change our operations.

This e-book gives you a straightforward starting place to understand the issues. It also provides dozens of practical ideas to reduce your carbon emissions, while generating a great return on investment (ROI). Share it with your colleagues, C-suite and executive board. And [contact our team at SION60](#) to find out how we can make the task easy and affordable.

Design: Kieli Bibbings, [Mirrorsmith](#)  
Editor: Colleen Shannon, Healthcare Writing LLC



# The case for action

Climate change is an urgent and complex problem. But with the right data and the tools to use it, healthcare organizations can have a real impact — and save a lot of money.

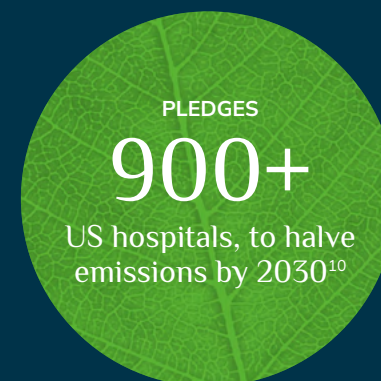
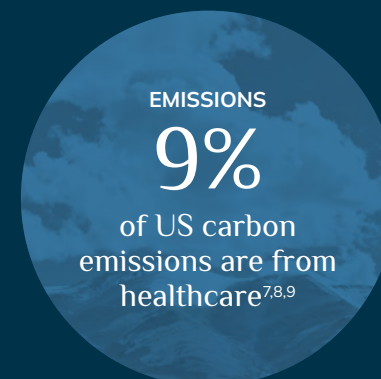
There's now a clear scientific consensus that pollution from carbon emissions is causing Earth's atmosphere to retain heat, leading to unusual weather conditions, climate change, and global warming.<sup>1</sup>

As a result, we already face a health emergency.<sup>2</sup> It's also a health equity issue, because some communities and individuals are more exposed and vulnerable to the effects of climate change.<sup>3,4</sup>

Even Pope Francis has recognized the practical and moral imperatives, calling on “all people of good will on the climate crisis” to take action to protect our common home, Earth, because “our care for one another and our care for the earth are intimately bound together.”<sup>5,6</sup>

It's no surprise to physicians, nurses, and managers that healthcare is directly connected to Earth. It gives us food, medicines, and the energy to power our healing work. We also know that providing care creates pollution, trash, and chemical waste. Our organizations emit harmful gases, burn fossil fuels, and pile up throwaway supplies.

**The good news is, there are hundreds of actions — and a compelling business case — to solve healthcare's pollution and waste problems.**







## What we can do right now

Many organizations are already acting. More than 100 US health systems, representing some 900 hospitals, have taken a pledge to halve their carbon emissions by 2030.<sup>10</sup>

Let's be honest though, the problem is complex, and it's low on the priority list for most hospital boards, executives, and medical staff. But mark my words, reducing waste, pollution and carbon emissions will become part of routine hospital operations very soon. Why?

For some businesses, it will be a legal requirement. In California, larger organizations will have to meet new regulations by 2026 (see page 7 for more).<sup>11</sup> And wherever you're based, every hospital is full of cash, just waiting to be found in the form of energy and waste savings. You only have to know where to look, and use the right lens.

Organizations that get going on this work now will have a head start on the competition. Read on to find out more about the rewards, and the tools that make it easy for you.



## Mandatory reporting | California

Two states already have mandatory carbon accounting requirements, and where they lead, other states may follow.

For organizations operating in California, environmental reporting will soon be mandatory under new state laws. There are two tiers:

- Organizations with **annual revenue of \$500 million** or more must report climate-related financial risks, and measures adopted to reduce them.<sup>11, 15</sup>
- Those with **annual revenue of \$1 billion** must also disclose their emissions in line with the Greenhouse Gas (GHG) protocol. These reports must be externally assured (validated) by a qualified third party.<sup>11, 16</sup>

The requirements start in 2026, but organizations must collect the data in 2025.

## Essential steps in California<sup>11,15,16</sup>



**Get ready to submit 2025 data on January 1, 2026.**

Determine what data to collect, and how to gather, organize and present it.



**Establish a third-party validator.**

You cannot do this on your own. For emission reports, a qualified third party must validate your numbers.



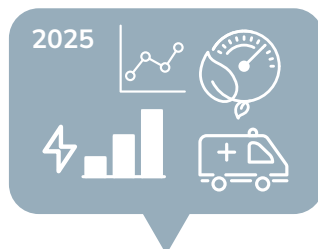
**Understand that non-compliance is not an option.**

Fines will range from \$50,000 to \$500,000.



**Take advantage of the ROI.**

Implementing a sustainability plan across departments will boost your bottom line.





## Mandatory reporting | Massachusetts<sup>17,18</sup>

Massachusetts, through its MassHealth program, will also require hospitals to report carbon emissions.

MassHealth requires each hospital to report on its greenhouse gas emissions, and verify its reporting through partnership with an approved third party.

By January 15, 2025, each hospital must submit to MassHealth, in the prescribed form and manner, the:

- Designated staff member responsible for GHG emissions reporting
- Third-party entity they have selected to validate their reports.

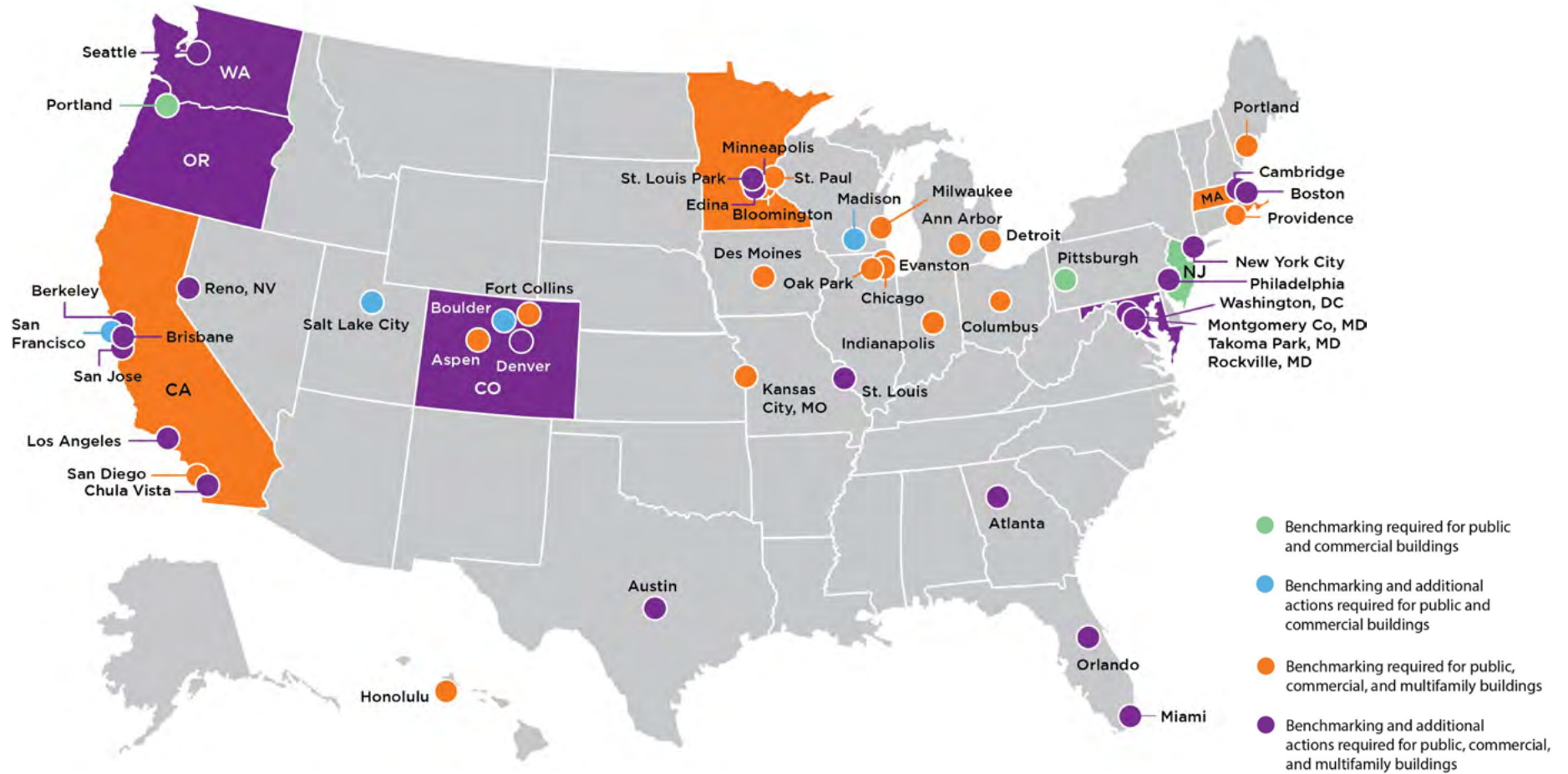
Not later than June 30, 2025, each hospital must submit to MassHealth:

- Their total Scope 1 emissions, including on-site fuel combustion, anesthetic gas, and fleet vehicle gas or diesel use
- The total Scope 2 emissions, defined as the hospital's purchased energy
- An attestation of truth.

There's not much time to gather, analyze, prepare and submit the required data. The requirement for third-party validation is actually an advantage, because this partner can help your organization achieve compliance and realize savings at the same time.



# US city, county, and state policies for existing buildings: Benchmarking, transparency, and beyond



# The power of knowing your numbers

As management consultant Peter Drucker said: “what gets measured gets done.”

Every physician, scientist and manager would agree that measurement is critical to describing anything we want to cure or improve — whether it's a tumor, an image, or a clinical service line. Measurement defines the object for diagnosis, the scope of the potential intervention, and the evaluation of the treatment.

Environmental measurement is a science practiced by experts and managers of all kinds. Even CFOs want to know about an organization's waste disposal and its gas, water, and electricity usage. Carbon emissions are no different.

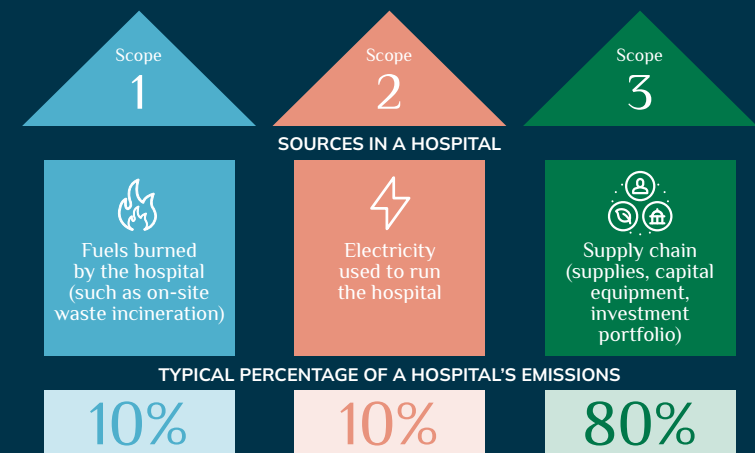
However, in the US this kind of thinking is new, and in the US health sector it is very new.



## Classifying emissions<sup>8, 13</sup>

Still, it's a discipline with a well-tested methodology, that's been in use since 1998. Here's how it works.

The Greenhouse Gas Protocol categorizes carbon emissions into three groups, as described in more detail on page 6 and illustrated here.



So, what is the average carbon emission per admission? Surprisingly, there is very little data to answer that question.

We're still in the early days, like we were with quality reporting in the early 2000s.



## How to estimate emissions

When you're looking at large organizations it's often possible to work this out from publicly available information. As an example, say you want to calculate the Scope 3 emission for an organization that, commendably, already publishes their Scope 1 and 2 emissions. Equipped with this data, to roughly calculate their Scope 3 emissions you would only need to know:

- How many hospitals they have
- Their size, scope and service levels
- Their quarterly or annual operational statistics.

Coming up with these answers is certainly possible for your own organization, if you're collecting the right numbers and know how to use them. The huge size of the emissions — at multiple tons per patient — might surprise you.

I recently calculated emissions for a large health system using publicly available data, and arrived at the conclusion that the average non-academic hospital produces about 5 tons of carbon emissions per admission.

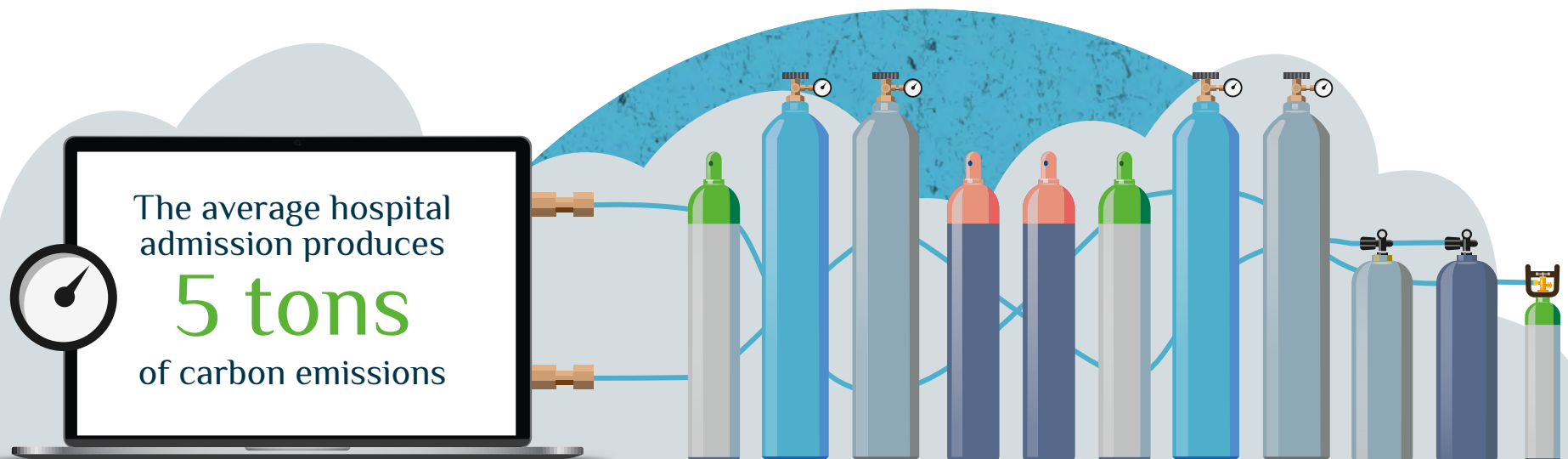
## Making it happen

Some innovative healthcare systems already measure, publish, and use this kind of data. As one example, Ascension Health places pollution data at the cornerstone of their environmental impact and sustainability strategies.<sup>19</sup> Dr Craig Cordola PhD, the organization's former COO, writes that Ascension's team "consolidates the data into standardized formats" to create dashboards, so hospital operators can track investments and progress toward environmental goals.<sup>20</sup>

Imagine the power of sharing such numbers across your medical staff and hospital board members. Imagine if each service line could publish their carbon footprint and the actions they are taking to reduce it. Imagine CFOs funding micro-grants for innovations to reduce emissions. Imagine a carbon footprint number for every new purchase.

### The race to protect our Earth starts with a number. What's yours?

Note: A version of this article first appeared in The Green Leap, as a guest blog hosted by Dr Reed Omary, MD. [reedomary.wordpress.com](http://reedomary.wordpress.com)



# 10 imperatives for health systems



1

**Establish governance:** Start a workgroup with a senior level sponsor. Include medical staff, nursing, OR, ICU, marketing, HR, facilities and finance. Potentially, add a board member.



2

**Educate:** Share information on how to start and build a compelling business case. The front line is your key to success.



3

**Measure:** The Joint Commission, and many state and local governments, are asking for your carbon footprint. In California, data collection starts Jan 1, 2025.<sup>11, 15, 16</sup>



4

**Evaluate energy budget:** Challenge your energy and utility suppliers. Are you getting the best price? What is their renewable energy strategy? Do they offer rebates or energy savings incentives? You're a key customer and they owe you a conversation.



5

**Attack electricity:** Rooftop and community solar panels are cost effective. Consider a multi-year power purchase agreement, to get better rates with 100% renewable energy and a renewable energy certificate (REC). Like a security, RECs are a tradable asset that can increase in value over time.



6

**Review transportation:** Electrify your fleet. Build a multi-year capital plan to replace every vehicle you can with an electric one. Electric vehicles will save you maintenance and fuel costs. Business air travel ticket purchases can buy the airline's carbon offset for a few bucks. Evaluate commuting.



7

**Make capital upgrades:** Walk through your buildings and plant operations — there's gold in there. Identify all hospital equipment over 20 years old. Ask your facility team for all projects that break-even in 10 years or less. Upgrade your building automation system.



8

**Focus on OR and ICU:** Kick-start OR and ICU workgroups with medical and clinical staff. This is where the most intense use of health services occurs, and there is a lot to do! Remove desflurane from the anesthesia gas formulary. Reprocess every instrument possible. Fund these workgroups with micro-grants and challenge them for ROI.



9

**Tell your supply chain:** Notify your top 100 vendors that you will ask for the carbon footprint of their products. They are waiting for hospitals to ask.



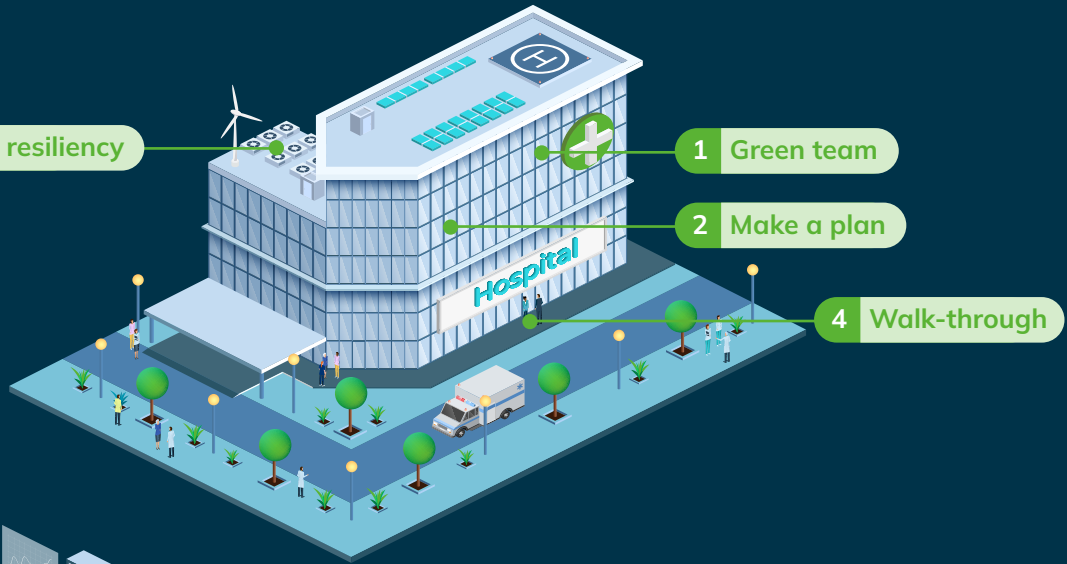
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**Involve your finance leadership:** All of these actions create a compelling, long-term business case. Also, evaluate your investment portfolio for dirty funds. No hospital owns tobacco stocks anymore.



# Project Library

Please click on each area to view project detail.



# Project 1 Green team

## Mobilize your allies

Early buy-in from colleagues and senior leadership is the key to success. Getting started could be as simple as meeting with some like-minded peers over coffee. Invite your nurses, physicians, managers, facility team and finance professionals to get involved, and form a governance group to green your hospital. Once you shine the light, other people will follow.

### Considerations<sup>21</sup>

Recruit a sponsor from the C-suite, so that climate goals can be embedded in overall strategy and performance measures.

Identify champions, key stakeholders, and a leader for your Green Team.

Be sure to include the CFO or someone who reports to them directly, because this work will create ROI.

Agree on the Green Team's remit: what is its role in the organization?

Keep to a regular schedule and agenda for meetings, and be sure to assign tasks with deadlines.

Engage the communications team to spread the message, involve staff, and encourage suggestions.



### KEY PEOPLE



Budget authority?



A frontline view?



Specialist knowledge?



No/low cost opportunity

## Project 2 Make a plan

### Set a clear strategy

Strategic planning is a regular exercise for hospitals. There are plans for cardiovascular services, neurosciences, orthopedics, capital projects, and cost cutting. Any good plan begins with some metrics, like market share, volumes or costs. Building a pollution reduction plan is no different. It all starts with a vision, backed up by strong tactics and measurable goals.

#### Considerations

What is your hospital already doing?

Do your research — what are other hospitals doing?

Identify local energy and water reduction regulations. How will you meet them?

Set key climate and cost savings goals, with timelines.

Engage physicians and nurses, and seek their cost-saving ideas.

Review facility capital plans for energy savings.



#### FIND YOUR BASELINE



Energy usage



Carbon emissions



Potential cost savings



No/low cost opportunity

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# Project 3 Energy resiliency

## Drive a hard bargain

Hospitals have already proven they're resilient, by weathering the COVID-19 pandemic and its aftermath. Similarly, there's an opportunity to build energy resilience, by revamping your electricity purchasing strategy. Given the current and future demand for data centers and AI, electricity supply will be funded by increased rates. By getting into the details, you can find savings and lock in long-term fixed prices with 100% renewable energy.

### Considerations

Utility expenses are often managed annually, by taking last year's budget and adding inflation.

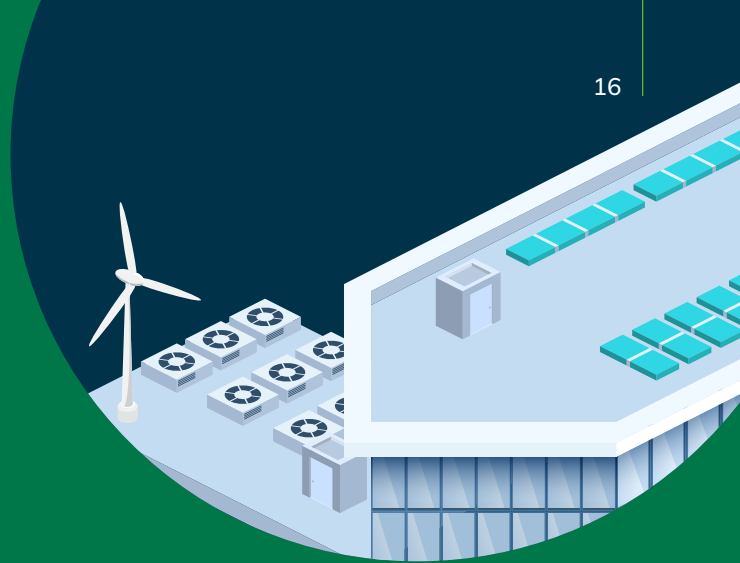
Instead, negotiate and lock in long-term savings.

Your hospital is likely a top customer for your local utility company. Take full advantage of this leverage.

Engage your electricity supplier aggressively and strategically on pricing.

Ask about incentive programs and rebates for renewable energy.

Explore customer rewards and support for energy efficiency, too.



### NUMBERS TO KNOW



Historic energy costs



Renewables use



Competitor pricing



Capital investment opportunity

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## Project 4 Walk-through

# Walk with your facilities team

Your hospital's facility teams are amazing! Without them, patients could not even be admitted. Take the opportunity to work with those teams. Have a "walk-through" the buildings together, and prioritize projects based on energy savings, costs, and carbon reduction, all without hiring expensive consultants. Invite your CFO to walk with you — they'll be excited by all the money they find right under their feet.

### Considerations

Assess old and wasteful boilers. Do they need maintenance? Replacing?

Check your chillers. Adjusting them to the best temperature could add up to real savings.

Check your air handling systems — are they up-to-date?

Is air conditioning used appropriately? If everyone is wearing sweaters, you're wasting energy and money.

Many hospital buildings run on an automated management system. Is the software outdated?

There are hundreds of motors in your hospital. Are variable settings used appropriately? This is especially important during surge pricing periods throughout the day.



### HOSPITAL ENERGY USE<sup>22, 23</sup>



42%  
of electricity =  
lighting



30%  
of electricity =  
ventilation, cooling  
and air handling



86%  
of oil and gas =  
heating air and  
water



Capital  
investment  
opportunity

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## Project 5 Green OR

# Maximize this profit center

Ask any OR nurse, supply tech or physician, and they will tell you there are literally tons of waste here. Take an opportunity to assess everything from surgical trays to anesthetic gases, and find savings in waste, cost reduction, re-use and renewables. The OR is a hospital's key profit center. There are additional savings to be made, so increase your OR's profitability by being green!

### Considerations

Turn up the temperature in the OR when it's not in use, by integrating data from your EMR system.

It may be possible to safely reduce air circulation in the OR. Review research in this area with your OR leaders and physicians.

Surgical kit preference cards are often outdated. Are you bringing in supplies that are not used anymore, but still must be thrown away?

Supply chain and nursing teams can assess waste practices, to reduce items that are burned upon disposal, and identify renewable alternatives.

Is the OR team sterilizing and reusing every piece of surgical equipment possible? Is there an opportunity to reduce "one-time use" equipment?

Desflurane is a heavily polluting anesthesia gas that remains in the atmosphere. Many hospitals are eliminating desflurane from their formularies — and saving money by doing it.



### KEY PERFORMANCE INDICATORS (KPIs)



Reduce waste



Reduce costs



Increase RN and MD happiness



Capital investment opportunity

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## Project 6 Green ICU

# Reduce intensive energy use

In addition to the OR, the ICU is one of the hospital's most resource-intensive services. Talk to your physicians and nurses, and identify the supplies and equipment they use most frequently. Where can you make energy savings, by safely using equipment at its peak efficiency? Are you minimizing disposable supplies where possible, and preferring re-usable or renewable alternatives?

### Considerations

In some cases where the whole hospital may not be ready for a comprehensive strategy, the ICU is a very good place to start.

Form a workgroup of interested nurses and physicians. They know where the waste is!

Have your facility manager isolate energy use and energy reduction strategies for your ICU(s).

Assess anesthesia order sets for these floors, including how nitrous oxide is delivered to the bed.

Track the supplies and materials used, to identify waste reduction opportunities. Ask suppliers for net zero products.

The ROI for this project comes from workforce engagement, energy savings, and supply savings.



### ICU IMPACT



80,000  
ICU beds  
in the US<sup>24</sup>



50%  
more waste  
than acute beds<sup>25</sup>



200%  
more GHG  
emissions than  
acute beds<sup>25</sup>



No/low  
cost  
opportunity

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## Project 7 Business case

# Make the CFO your ally

Your CFO is a powerful ally. If you're not used to dealing with the business side of running a hospital, it can be intimidating at first. But don't let it get to you. Come to them with some numbers, and show them how the hospital can save money or even make more. Once the CFO sees you're speaking their language, they will help you.

### Considerations

You can gain soft and hard ROI from different sources, and use that to fund a multi-year strategy.

Soft ROI comes from engaging your workforce (particularly physicians and RNs, who are in short supply), and marketing to your commercial patients.

Hard ROI comes from detailed energy budgeting, energy savings projects, utility rebates, supply savings, and investments.

Electricity must be managed differently. AI and data center projects will increase electricity costs in the next few years, so lock in low-cost renewable energy contracts.

Utility companies want their large customers to reduce energy use, as it saves them capital construction costs for power generation.

SION60 has 75+ projects ready to go on Day 1, including 18 for energy. We provide project management, empower your facilities team, and save you money on consultants.

### KEY DATA SOURCES



Energy invoices  
(use + costs)



EnergyStar  
database  
(if accurate)



Vehicle fleet  
(size + costs)



No/low  
cost  
opportunity

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## Project 8 Measuring progress

# Make the most of your data

Healthcare's quadruple aim is about reducing cost, improving population health, patient experience, and health worker wellbeing.<sup>26</sup> It is often quoted and instantly frames a strategy for action. There is an ROI for sustainability that can be confidently communicated to your board and CFO. To get there, you need the data to support your case and track progress.

### Considerations

You have data at your fingertips, and there is an opportunity to manage it better.

Data sources mostly come from accounting, utility bills, supply chain, facilities, and pharmacy.

The Joint Commission has a sustainability program — who can't use a little extra credit with their quality surveys?

Many local regulations require the use of a specific tool: we can help clean that up for you, too.

Also consider using HR surveys, marketing surveys, patient surveys to gauge interest.

SION60 will input all your data **at no charge**.



### KEY PERFORMANCE INDICATORS (KPIs)



Energy usage



Utility bills



EnergyStar ratings



No/low cost opportunity

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## Project 9 Lighting

# Make savings throughout the hospital

Electricity is a major cost, both in terms of carbon emissions and cash. In a typical hospital, lighting accounts for a whopping 42% of electricity use.<sup>22</sup> Reviewing your lighting, inside and out, is a simple step you can take with your facilities team. And switching to more energy-efficient solutions can yield significant savings while helping the planet.

### Considerations

Assess the lighting in your parking lot. Is it as efficient as possible? Good lighting here is a safety issue, too.

Are you using LED lights throughout the hospital? They use 90% less energy and last 15 times longer than traditional bulbs.<sup>27</sup>

Your utility company may offer rebates for switching to energy-efficient lighting.

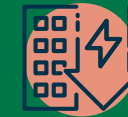
Make the most of natural daylight wherever possible. This has health benefits for patients, too.

Review lighting control and scheduling to make the most of off-hour savings.

Are you using room occupancy sensors, where appropriate?



### KEY PERFORMANCE INDICATORS FOR LEDS



**5 point**  
energy use  
intensity (EUI)  
reduction



**15%**  
sitewide  
electricity savings



**8 year**  
simple payback



Capital  
investment  
opportunity

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## Project 10 Facility energy

### Make serious ROI

According to the US Department of Energy, 80% of a hospital's electricity usage is from lighting, ventilation, cooling, computers and refrigeration.<sup>22</sup> The same document says 86% of natural gas usage is for space and water heating. The ROI for this project is long-term energy savings, which increase margins each year.

#### Considerations

Calculate a rolling Energy Use Intensity score. This is similar to other accounting metrics like market share, volume, and visits.

The typical EUI score for hospitals is ~250.

The break-even period for many energy savings projects is less than 2 years.

Assess chillers and boilers for age, condition and replacement timelines.

Upgrade your facility technology to current software versions and digital controls.

Assess air management strategies including outside air, and air handling equipment.



#### ESTIMATED ENERGY SAVINGS



8–12%  
boiler  
replacement



5%  
optimized  
ventilation



2–4%  
air temperature  
reset



No/low  
cost  
opportunity

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# People, profit, planet...Patient Earth

## Sustainability is part of the hospital's mission:

In 1920, the founder of public health Charles Winslow at Yale University, defined public health as “the science and the art of preventing disease, prolonging life, and promoting physical health and efficiency through organized community efforts.”<sup>28</sup> The hospital is expected to improve community health, not harm it with waste and pollution.

## Improve your margin

There is a compelling business case in reducing energy costs, waste and pollution. As one CFO told me, there is “gold in these buildings, I walk across it every day.” To realize these savings requires initiative, to measure and organize projects in a different way. Fortunately, there is technology that brings these aspects together at a low cost.

Regardless of political views, capitalism is engaged with new technologies and profits. Debt financing is sourced globally and bond issuers ask for carbon reduction plans. Local, state, regulatory and federal government initiatives encourage the reduction of pollution and energy use. Massive private equity funds are investing in a post-carbon economy that over the next 10 years will inject \$2-4 trillion in investments. Politically conservative states like Texas, Oklahoma, Kansas and Wyoming are making billions from renewable energy. And in coastal areas, insurance policies reflect the risk of mother nature's forces in their premiums.

Finally, electricity supply is tight and demand is going to increase in the next decades due to energy intensive AI products and data centers. That means increased prices for electricity. It behooves savvy CFOs to lock in long-term electricity prices with renewable energy contracts. This alone can save millions over many years for further energy reduction and sustainability investments.

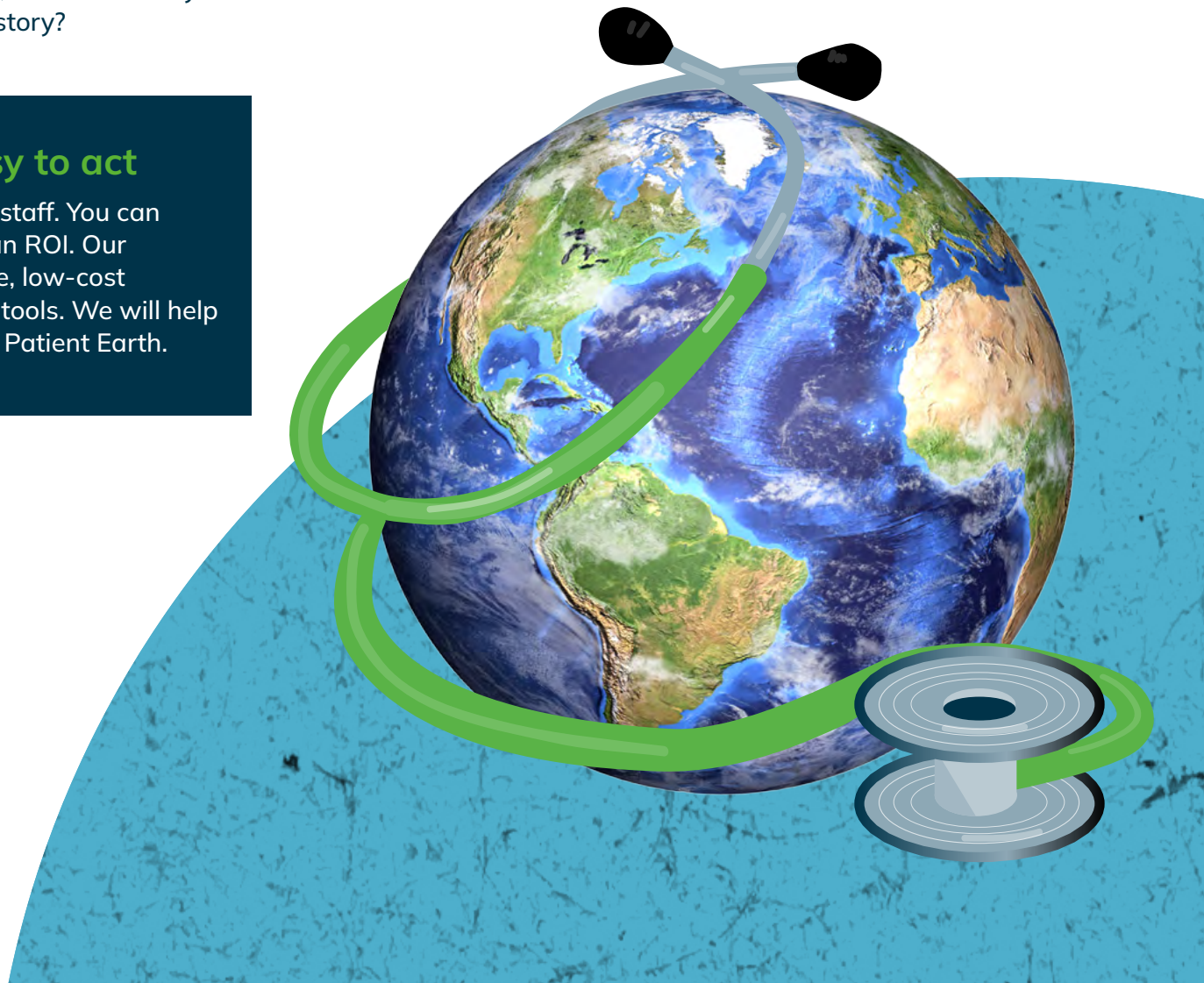


## Retain your workforce and customers

Hospitals employ the toughest people on Earth. Doctors, nurses, engineers, and environmental services doing the toughest work—surgery, cancer care, emergency. It's life and death. Every minute. Every day. These employees want to know your plan, just ask them. Many hospital board members are also involved with companies that have sustainability strategies. Your commercial health plan customers, especially those under 40 years old, want to know your plan. How is your marketing team telling your story?

## The hospital is the hero: it's easy to act

The hero on this journey is the hospital and its staff. You can start with a broad strategy or a unit. There is an ROI. Our company helps hospitals with a comprehensive, low-cost platform, practical projects, and measurement tools. We will help you take care of our most important patient — Patient Earth.



# How SION60 can help

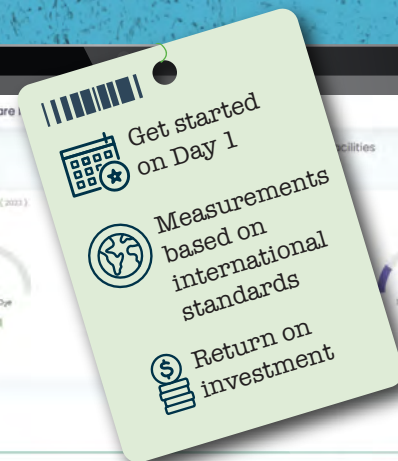
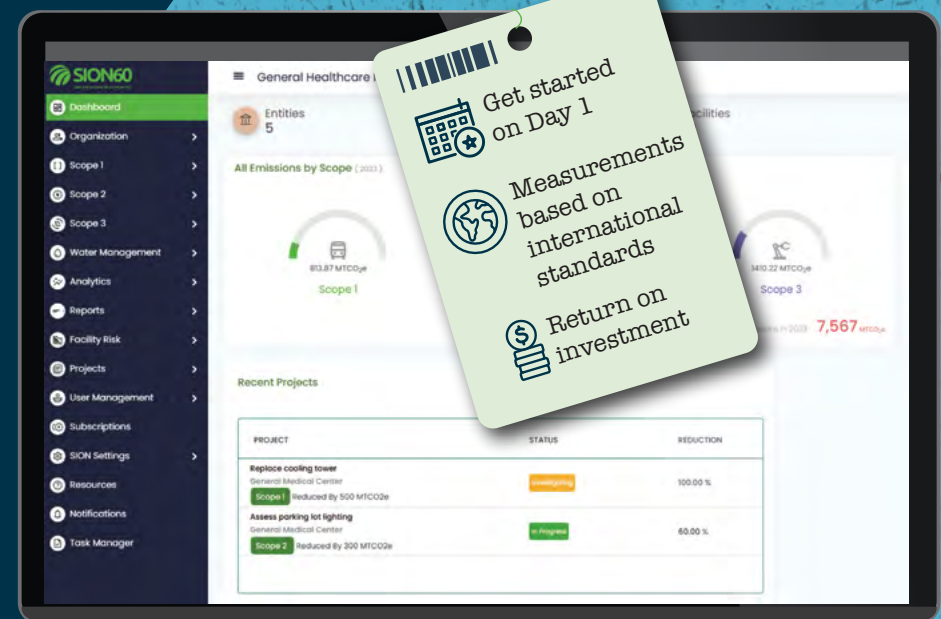
We built SION60 to make it easy for hospitals to save money while reducing waste and pollution with one simple, affordable platform we call CarbonEMR™.

In this case, EMR stands for EnvironMental Record. Its core is an ROI module, with project and document libraries to help you get started on Day 1.

Our company will extract your data, and input it into your CarbonEMR™. Of course, the CarbonEMR™ includes measurements that are based on international standards, and guidelines from The Joint Commission.

We also help your team plan and run projects that lighten your hospital's load on the planet, while saving money and improving the bottom line.

You can completely outsource your strategy for less than the cost of a single employee, and keep all the savings! Why did we do this? Because Earth can't wait any longer, and hospitals need help to do the work.



Find out more

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 [www.sion60.com](http://www.sion60.com)





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