INDIAN HEALTH SERVICE

Sustainability Progress Report

Fiscal Years 2018 - 2021

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INDIAN HEALTH SERVICE

Final Sustainability Progress Report

Fiscal Years 2018, 2019, 2020, and 2021

U.S. Department of Health & Human Services (HHS)
Indian Health Service (IHS)
Division of Environmental Health Services (DEHS)

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MESSAGE FROM THE CHIEF SUSTAINABILITY OFFICER

JAMES LUDINGTON

Welcome!

In this update you will find the Indian Health Service (IHS) 2018-2021 Sustainability Progress Report, which describes the continuing actions we have taken over the last four years to implement our pledge to minimize our carbon footprint and to become more environmentally sustainable. Various Executive Orders, environmental regulations, and policies guide how we implement sustainability strategies, but the heart of the IHS mission is to raise the physical, mental, social, and spiritual health of American Indian and Alaska Natives (AI/AN) to the highest level. This report is presented with the purpose of communicating, externally and internally, the sustainability activities and accomplishments of Federal and Tribal staff nationwide at all organizational levels.

This report highlights exemplary Federal and Tribal projects in different areas of sustainability. Some examples include energy efficiency, renewable energy, water conservation, and reductions in greenhouse gas emissions. It also acknowledges IHS and Tribal staff members that have received Department of Health and Human Services Green Champion Awards for their noteworthy contributions to sustainability. Lastly, it also highlights the accountability and transparency of our impact on the environment and exhibits our efforts to address Presidential Executive Orders regarding environmental sustainability.

The COVID-19 pandemic imposed disproportionate impacts on AI/AN communities across the country and provided unique challenges to IHS. We have worked to ensure the safety of our patients and staff, as well as Tribal community members, through actions such as: the timely distribution of vaccines and personal protective equipment; heightened disease control; provision of temporary space or alteration projects to accommodate care; and the modernization of telehealth services. Sustainable, resilient infrastructure only provides the space and tools for healthcare delivery, but healthcare providers and staff are required to deliver the care. We want to recognize the efforts of the IHS and Tribal healthcare providers and staff that continued to serve their communities, successfully sustaining healthcare services vital to AI/ANs during the pandemic.

AI/AN communities have great respect for the environment. In conjunction with the IHS mission, it is incumbent that IHS understand Native American culture while protecting the environment for both present and future generations.

I am happy to receive your feedback and thoughts on this report.

James Ludington -S Digitally signed by James Ludington -S
Date: 2023.08.25 11:42:41 -04'00'

James Ludington, P.E.
Chief Sustainability Officer
Indian Health Service

CHAPTER ONE
SUSTAINABILITY

1.0 SUSTAINABILITY

The purpose of environmentally sustainable practices is to create and maintain the conditions under which humans and nature can exist in productive harmony—fulfilling social, economic, and other necessities of present and future generations. Sustainability is vital to ensuring that our communities continue to have the resources needed to protect human health and our environment indefinitely.

This Indian Health Service (IHS) Sustainability Progress Report covers fiscal years (FY) 2018 - 2021[1] and describes the continued commitment of IHS to environmental sustainability. The IHS sustainability program is guided by federal laws and regulations that set goals and determine target focus areas. IHS staff across the nation are committed to not only following federal guidelines, but also exceeding targets and goals where possible. This report showcases their efforts, despite challenges such as those posed by the COVID-19 pandemic. IHS strives to design and implement efficient sustainability projects that are life cycle cost-effective and result in substantial improvements to IHS operations. Central elements of the IHS Sustainability Program from FY 2018 through FY 2021 include the implementation of energy and water conservation measures and the assessment of sustainability goals through annual reporting. This report highlights many energy and water conservation projects and features IHS personnel and projects that have been recognized for excellence in the field of sustainability.

Key practices of sustainability include:

- Reducing energy and fuel usage;
- Converting to renewable sources of energy;
- Conserving water;
- Minimizing waste;
- Purchasing environmentally preferable products and services;
- Implementing environmentally-responsible building practices in the planning, construction, and operation phases; and
- Changing individual behaviors in order to protect the environment for ourselves and future generations.

In addition to increasing efficiency and reducing impacts to the environment, the IHS Sustainability Program recognizes that addressing environmental justice is of critical importance to sustainability and the IHS mission. As the principal federal health care provider and health advocate for American Indian and Alaska Native people, IHS recognizes that American Indian and Alaskan Native communities and disadvantaged, vulnerable, low-income, and marginalized peoples are disproportionately burdened by environmental hazards. The combination of environmental risks and social inequities create a cumulative, disproportionate impact that hinders optimal health for these populations. IHS is addressing environmental justice issues through education, raising awareness, and striving to provide an environment where all people enjoy the same degree of protection from environmental and health hazards.

[1] Note that a fiscal year is distinct from calendar years. The federal government's fiscal year runs from October 1st of one calendar year to September 30th of the next calendar year. Thus, this report covers the period from October 2017 to September 2021.

For IHS, sustainability means:

The long-term management of our facilities and operations in a manner that reduces our impact on the environment;

A safe and healthy environment for IHS staff, visitors, and patients;

Partnering with tribes to develop sustainable communities.

1.1 Federal Regulations on Sustainability

The implementation of sustainable practices at IHS is shaped by federal laws and regulations. The Energy Policy Act of 2005 (EPAct 2005), the Energy Independence and Security Act of 2007 (EISA 2007), and Energy Act of 2020 (EA 2020) establish government-wide federal sustainability goals and objectives. Executive Orders (EOs) provide further direction to IHS sustainability efforts. Throughout the period of FY 2018 through 2021 that is covered by this report, there were four primary EOs that directed IHS sustainability activities. **Figure 1** below displays the years the relevant EOs were active throughout the period.

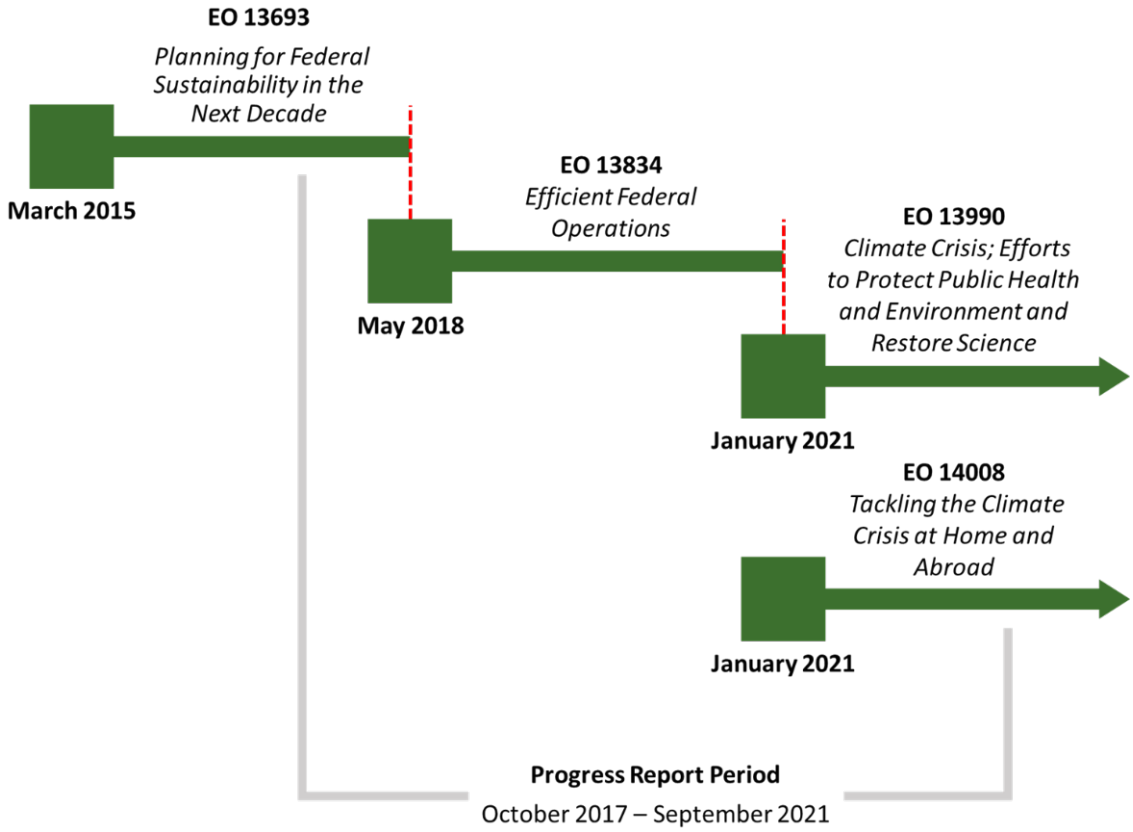


Figure 1. Active Years for Relevant Executive Orders

1.1.1 EO 13693 "Planning for Federal Sustainability in the Next Decade" (3/19/2015-5/17/2018)

Released in March of 2015, EO 13693, "Planning for Federal Sustainability in the Next Decade," established a set of sustainability goals, targets and requirements for federal agencies. EO 13693 established FY 2025 targets for key measures, seeking to cut the government's greenhouse gas (GHG) emissions, reduce energy and water use intensity in federal buildings, and increase the share of electricity the federal government consumes from renewable sources. EO 13693 was revoked in May 2018 by EO 13834. Due to its revocation less than a year into the period covered in this report, EO 13693 was not an important source of direction for IHS sustainability efforts for the majority of the report period.

1.1.2 EO 13834 "Efficient Federal Operations" (5/17/2018-1/20/2021)

Released in May of 2018, EO 13834, "Efficient Federal Operations," revoked EO 13693 and established a set of efficiency goals for federal agencies. Agencies were directed to continue meeting statutory requirements, but to implement cost-effective, efficient measures in building energy use, renewable energy, water consumption, energy efficiency requirements, building construction and design, and waste reduction (OMB, 2017). Additionally, this EO established a federal Chief Sustainability Office (CSO) that would monitor progress related to this order and lead the development of programs and policies to assist agencies with the goals of this order (CEQ, 2019). Since EO 13834 was not revoked until FY 2021, EO 13834 was the key driver for IHS sustainability efforts during this report period. EO 13834 directed federal agencies to:

- Achieve a 30 percent reduction in building energy use relative to FY 2003 by FY 2015 and demonstrate annual progress for each fiscal year
- Source at least 7.5 percent of the agency's total electricity consumption from renewable sources by FY 2013
- Achieve 20 percent reduction in potable water intensity relative to FY 2007 by FY 2015 and demonstrate annual progress for each fiscal year
- Ensure that for all buildings over 10,000 gross square feet, at least 15 percent of buildings or gross square feet shall qualify as sustainable
- Implement waste prevention and recycling measures and comply with all federal requirements
- Meet statutory requirements with respect to energy and water conservation and cost-effective investments to ensure efficient management of facilities
- Achieve 20 percent petroleum reduction relative to FY 2005 by FY 2015 and demonstrate annual progress each fiscal year

1.1.3 EO 13990 "Climate Crisis; Efforts to Protect Public Health and Environment and Restore Science" (1/20/2021-Present)

Released in January of 2021, EO 13990 "Climate Crisis; Efforts to Protect Public Health and Environment and Restore Science" established a review of previous agency actions. Agency heads were directed to review existing regulations, orders, and other policies against a series of policy goals including protecting public health and the environment, reducing GHG emissions, and prioritizing environmental justice. Additionally, EO 13990 revoked the majority of EO 13834, "Efficient Federal Operations". Sections 6, 7, and 11 of EO 13834 were not revoked and include the establishment of a federal CSO.

1.1.4 EO 14008 "Tackling the Climate Crisis at Home and Abroad" (1/27/2021-Present)

Released in January of 2021, EO 14008 "Tackling the Climate Crisis at Home and Abroad" promotes robust climate action to increase climate resilience, ensure national security, and guide a pathway towards low GHG emissions. The EO establishes goals to strengthen clean air and water protections, highlights environmental justice, holds polluters accountable, and assesses and mitigates climate-related risks in all sectors of the economy. The sustainability goals of EO 14008 are to:

- Aim to achieve a carbon pollution-free electricity[2] sector by 2035
- Ensure federal infrastructure investment reduces climate pollution and require that federal permitting decisions consider the effects of GHG emissions and climate change

The EO directs federal agencies to:

- Use all available procurement authorities to acquire clean and zero-emission vehicles for federal, state, local, and tribal government fleets
- Create a draft climate action plan that describes steps to bolster adaptation and increase climate change resilience and, for each following year, create annual progress reports on the status of implementation efforts
- Incorporate achieving environmental justice into agency missions
- Take steps to ensure federal funding is not directly subsidizing fossil fuels
- Identify opportunities for federal funding to spur innovation, commercialization, and deployment of clean energy technologies and infrastructure

1.2 Federal Guidelines and Resources

As a result of EO 13834, the Council on Environmental Quality (CEQ) published an updated Guiding Principles for Sustainable Federal Buildings (2020), which applies to existing buildings, new construction or major renovations. The Guiding Principles are a set of established criteria that require federal agencies to "design, mitigate, and measure the impact of their buildings" and "ensure agency portfolios remain effective and operational for the life of their facilities." IHS works

[2] Carbon pollution-free electricity is electrical energy produced from resources that generate no carbon emissions.

to meet these guidelines in both new construction and existing buildings. The Guiding Principles ensure federal buildings:

1. Employ Integrated Design Principles
2. Optimize Energy Performance
3. Protect and Conserve Water
4. Enhance the Indoor Environment
5. Reduce the Environmental Impact of Materials
6. Assess and Consider Building Resilience

IHS also follows the Guidelines for Energy Management developed by the joint Environmental Protection Agency (EPA) and Department of Energy (DOE) ENERGY STAR® program. ENERGY STAR® provides a road map for continuous improvement and best practices from the nation's leaders in energy management. ENERGY STAR Portfolio Manager® (ESPM) is an online tool that tracks energy and water consumption, as well as GHG emissions, and accounts for differences in operating conditions, changes in regional weather data, and other important considerations. Reporting energy and water consumption in ESPM is particularly useful for IHS, which operates a wide variety of building types across different climate zones. IHS uses ESPM to collect, compile, and report agency-aggregated data on an annual basis to calculate GHG emissions.

1.3 IHS Guidelines and Resources

The 2019 IHS Office of Environmental Health and Engineering (OEHE) Architectural/Engineering (A/E) Design Guide[3] describes requirements for the design and construction of federally-funded IHS facilities. The A/E Design Guide's sustainability chapter includes guidance for reducing environmental impacts and improving human health in new and existing construction. The sustainability chapter proposes sustainability requirements to "ensure that IHS facilities are designed and constructed in a manner that enhances indoor environmental quality for users while reducing the production and consumption of GHGs, and pursue cost-effective waste minimization during the construction and renovation phase of the building" (IHS, 2019a).

Guidance established in the A/E Design Guide includes:

- Prohibition of the use of potable water for landscaping
- Requirement to use EPA WaterSense-labeled[4] products or other water conserving products where available
- Guidance and requirements for the implementation of Building Information Modeling (BIM)[5] in the design, construction, and operation of new facilities

[3] A revised version of the OEHE A/E Design Guide was published in 2022, but the 2019 A/E Design Guide was the version in use during the reporting period.

[4] The EPA WaterSense program certifies water-efficient products and services that use at least 20 percent less water, save energy, and perform as well or better than regular models.

[5] BIM is a software that creates a digital model of a building or project.

The A/E Design Guide incorporates the Guiding Principles and the Leadership in Energy and Environmental Design (LEED®) certification program. LEED® is the US Green Building Council's internationally recognized green building certification system. It provides building owners and operators with a framework for identifying and implementing practical and measurable green building design, construction, operations, and maintenance solutions. Projects earn points across several categories, including energy use and air quality. Based on the number of points achieved, a project then earns one of four LEED rating levels: Certified, Silver, Gold, or Platinum.

Figure 2. LEED Core Concepts and Strategies

IHS designs new facilities and improvements for existing facilities according to the six LEED core concepts and strategies shown above. As prescribed in the A/E Design Guide, LEED Silver certification is required for major renovations and new construction. Higher levels of certification are desired and encouraged when it is cost effective to do so. LEED Gold certification is used as a target to create a buffer to ensure that at least LEED Silver certification is achieved.

The OEHE Technical Handbook is another important guidance document intended to support implementation of IHS policy and to identify standards and regulations for technical services that IHS provides. The Technical Handbook also contains guidelines and requirements related to health care facilities that are important for all IHS projects.

CHAPTER TWO

IHS SUSTAINABILITY PROGRAM

2.0 IHS SUSTAINABILITY PROGRAM

In addition to following federal requirements, IHS strives to be forward-acting on environmental efforts and lead by example in sustainability wherever practicable. The IHS Sustainability Program demonstrates the IHS commitment to continually improve the efficiency of operations and reduce impacts to the environment. Environmental concerns are considered at the earliest stage possible by IHS, contractors, and suppliers.

The IHS Sustainability Program is led by the Sustainability Advisory Board (SAB) and the Environmental Steering Committee (ESC). The SAB sets targets and goals for the program and the ESC reviews and funds projects that help IHS meet those goals and targets. The SAB and ESC contribute to the development of annual reports that support the implementation of sustainable operational policies and practices.

2.1 IHS Sustainability Implementation Plan and HHS Strategic Sustainability Performance Plan

IHS develops an annual Sustainability Implementation Plan (SIP), a planning and reporting document that supports the development of the annual HHS Strategic Sustainability Performance Plan (SSPP). Together, the SIP and SSPP help track progress, set objectives, and manage different federal goal areas as they relate to sustainability. The SIP is organized into goal areas that correspond loosely with EO 13834. These ten goal areas include:

1. Facility Energy Efficiency
2. Efficiency Measures, Investment, and Performance Contracting
3. Renewable Energy
4. Water Efficiency
5. High Performance Sustainable Buildings
6. Waste Management and Diversion
7. Transportation / Fleet Management
8. Sustainable Acquisition / Procurement
9. Electronics Stewardship
10. GHG Emissions

The SIP identifies IHS-specific objectives within each goal area so that IHS can develop initiatives, strategies, and projects to reach those objectives. The SIP describes agency progress and identifies challenges in each goal area. IHS updates the objectives in the SIP with the aim of

meeting the federal requirements for each goal area. If necessary, IHS can adjust its strategies or approach to ensure that the best strategies are used to fulfill the federal requirements.

2.2 Sustainability Advisory Board

The SAB is the reviewing body for managing sustainability requirements and providing executive direction. The SAB consists of representatives from offices throughout IHS and is chaired by the IHS Chief Sustainability Officer, James Ludington. The Board is chartered to:

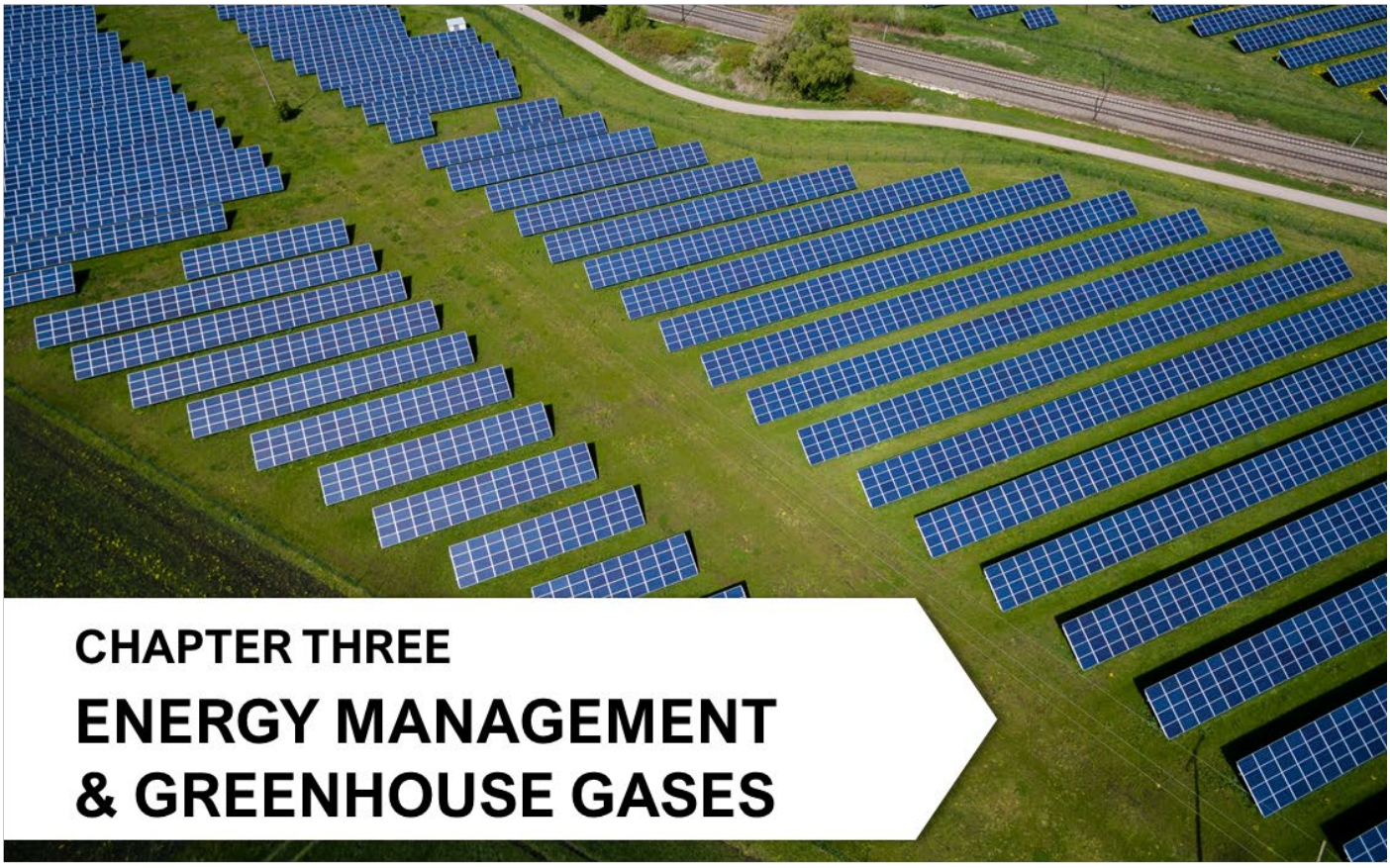
- Coordinate a multiple-office approach to support multifaceted sustainability initiatives;
- Promote environmental sustainability as a way of doing business and emphasize potential benefits of sustainable investments; and
- Ensure IHS planning incorporates practices that support sustainability needs.

The SAB assists IHS in contributing to HHS SSPP objectives by developing the SIP and setting goals and targets to implement environmental sustainability initiatives. During quarterly meetings, members discuss updates and progress on sustainability goals, current challenges, and upcoming events and deadlines. Despite the difficulties due to the ongoing COVID-19 pandemic, the SAB realized many achievements in FY 2018 through FY 2021, including improvements in fleet management, sustainability of buildings, renewable energy use, and water use efficiency which are presented in Sections 3.0 and 4.0.

2.3 Environmental Steering Committee and Green Infrastructure Projects

The IHS Environmental Steering Committee (ESC) consists of OEHE staff across the nation who review and fund applications for sustainability, environmental remediation, and demolition projects. The ESC can approve funding for project proposals that emphasize improvements in IHS facilities that help IHS meet federal sustainability goals. Many sustainability projects implement recommendations from energy audits such as lighting, water fixture, and heating system upgrades. The ESC also funds the installation of onsite renewable energy sources, such as solar and wind projects.

IHS receives annual appropriations of Green Infrastructure funds to address sustainability in existing health care facilities. The appropriation directs the IHS OEHE to incorporate planning, design, and operations of buildings to reduce costs, minimize environmental impacts, use renewable energy, and incorporate green infrastructure and the most current energy efficiency codes and standards to the maximum extent practicable.



CHAPTER THREE

ENERGY MANAGEMENT & GREENHOUSE GASES

3.0 ENERGY MANAGEMENT & GREENHOUSE GASES

IHS consistently seeks to improve sustainability efforts through conserving energy wherever practicable. Existing IHS facilities are actively updating building systems with more efficient equipment and processes to conserve energy and reduce GHG emissions. New facilities are designed to meet the Guiding Principles and a minimum of Silver Certification by LEED. From FY 2018 through early FY 2021, IHS was guided by EO 13834, which set a goal to implement cost-effective, efficient measures in sustainability while also meeting statutory sustainability requirements. In FY 2021, IHS was guided by EO 14008, which promoted robust climate action to increase climate resilience and reduce GHG emissions.

The GHG emissions generated by IHS can be divided into three categories, or "Scopes", based upon the source of those emissions. Scope 1 emissions include those from IHS operations or sources that are owned or controlled directly, such as any fossil fuels burned onsite, IHS-owned vehicles, and other localized sources. Scope 2 emissions originate indirectly from IHS's purchase and use of energy, such as electricity, steam, heat, or cooling, from sources that are not owned or operated directly by IHS. An example of Scope 2 emissions includes the emissions from electricity generated off-site that is used to power an IHS building or electric vehicle. Scope 3 emissions include all emissions generated by activities from resources not owned or controlled by IHS, but that are still indirectly affected by IHS activities (EPA, 2023). Scope 3 emissions take into consideration the full impact of an organization's activities that may not be immediately apparent. For example, if IHS purchased new medical equipment for a hospital, then the Scope 3 emissions would include both the emissions associated with the manufacture of that equipment and the eventual end-of-life treatment needed to dispose of the equipment. Some other common examples of Scope 3 emissions include employee travel and commuting, solid waste disposal, and wastewater treatment. The wide variety and scale of Scope 3 emissions can make them more complicated to accurately quantify. In FY 2018, IHS reported a 49.4 percent reduction in Scope 1 and 2 GHG emissions relative to FY 2008.

Many of the IHS energy conservation, fleet management, renewable energy, and other sustainability efforts reduce Scope 1, 2, and 3 GHG emissions, as discussed in the next several sections.

3.1 Energy Performance

IHS is responsible for reporting the energy use of its building portfolio annually. In 2021, IHS owned 4.5 million square feet of federally-operated space and 2,122 buildings, including hospitals, outpatient clinics, office buildings, and other support buildings. IHS facilities are divided between twelve physical areas of the United States: Alaska, Albuquerque, Bemidji, Billings, California, Great Plains, Nashville, Navajo, Oklahoma, Phoenix, Portland, and Tucson. Each area has a unique group of Tribes that they work with on a day-to-day basis.

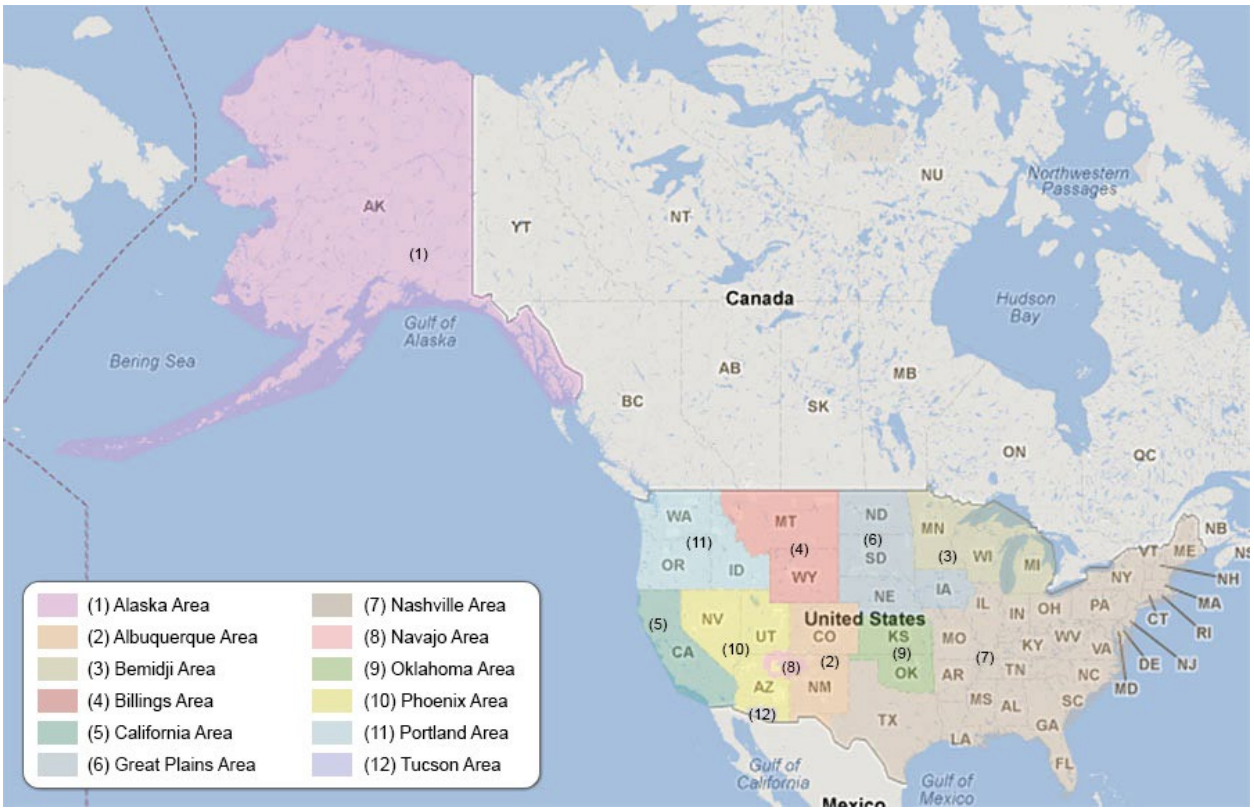


Figure 3. IHS Area Offices

EO 13834 set goals for federal agencies including reducing energy intensity by 30 percent relative to FY 2003 and demonstrating continued annual progress in reducing energy intensity. In FY 2003, the new baseline for the comparison of energy use, IHS consumed a total of approximately 199.6 thousand British thermal units (MBtu) per gross square foot (GSF). The measure of energy use per GSF is known as energy use intensity (EUI), and is the basis for federal energy reduction goals. In FY 2018, IHS reported a 28.6 percent reduction in EUI from the 2003 baseline (IHS, 2019b). IHS projected a further 3 percent reduction in EUI for both FY 2019 and 2020. IHS has placed a high priority on improving its existing facilities by replacing outdated equipment with new, more efficient equipment that reduces energy use and enables facilities to be as effective as possible in providing healthcare to meet IHS's mission. By achieving a 28.6 percent reduction in energy intensity in FY 2018, IHS is well on the way to meeting the goal of reducing energy intensity by 30 percent relative to a FY 2003 baseline.

3.2 Energy Conservation Measures

IHS has been incorporating energy conservation measures (ECMs) into existing buildings to improve energy efficiency. Common ECMs being implemented at IHS facilities include lighting upgrades, photovoltaic systems, geothermal energy, daylight design, and electronic stewardship.

3.2.1 Lighting Upgrades

Lighting consumes about one third of the electricity used in commercial buildings. With the replacement of incandescent light bulbs to energy efficient light-emitting diode (LED) bulbs, as well as improving building design to use sunlight, a significant amount of energy can be saved. LED light fixtures have a longer lifespan than incandescent light bulbs and produce the same

amount of light with about one tenth the energy use. They also use fewer toxic materials to make and last many times longer. Some lighting systems in IHS facilities include occupancy sensors and automatic dimmers.

3.2.2 Photovoltaic (PV) Systems

Also known as solar cells, PV cells convert sunlight directly into electricity. There are several generations of PV systems that differ in size and materials, striving to improve cell efficiency while keeping material cost down. Currently, a typical commercial solar PV cell has an efficiency of about 18 to 22 percent under standard test conditions (DOE, No Date). The drawback of solar energy is the inconsistency of sunlight. As a result, areas of the nation that receive more annual sunlight are better able to take advantage of PV systems. IHS has many facilities that are located in areas that have weather favorable for PV systems. To reduce dependency on electricity from public utilities, IHS is constructing new facilities with PV systems and solar water heaters that harness the sun's energy.

3.2.3 Geothermal Energy

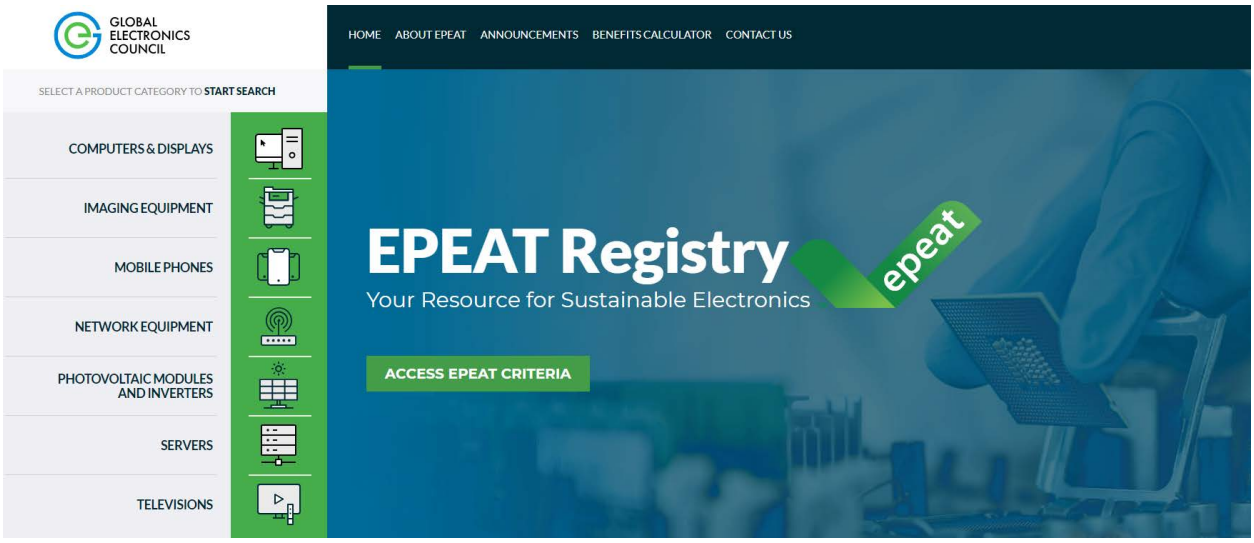
In most places around the world, the Earth maintains a temperature between 50 and 60 degrees Fahrenheit ten feet below the surface. A geothermal system uses this resource to heat and cool buildings. Geothermal systems pump fluid underground, where it gets either heated or cooled by the earth. That fluid is then circulated to a heat pump to either warm or cool the air in the building. IHS designs and implements geothermal systems where practicable to lower energy costs and reduce the amount of GHG emissions that IHS facilities produce compared to conventional electric or gas heating and cooling systems.

3.2.4 Daylighting Design

Incorporating simple design features into new construction can reduce energy consumption and increase sustainability without the use of specialized equipment. For example, windows and skylights can be strategically placed to complement the layout of the building and to allow natural daylight to illuminate rooms so that less electricity is needed to power lighting systems. Designers aim for light distribution and indirect lighting to avoid glare and overheating. Where possible, IHS is implementing the principles of daylighting design to reduce energy consumption during renovations of existing facilities and during new construction.

3.2.5 Electronic Stewardship

IHS is committed to being a responsible consumer of electronics and a leader in electronics stewardship through a long-term approach towards electronics management with a focus on sustainability. Sustainable electronics management includes purchasing environmentally sustainable electronics and disposing outdated electronics responsibly. IHS has set a goal to ensure at least 95 percent of all acquired monitors, desktop computers, and laptops meet environmentally sustainable electronics criteria, specifically by purchasing electronics that are registered under the Electronic Product Environmental Assessment Tool (EPEAT). EPEAT is a global ecolabel that identifies environmentally preferable electronic products by using defined environmental and social responsibility performance criteria to rank products (EPA, 2022). Additionally, IHS set an end-of-life goal to ensure that 100 percent of electronics are disposed responsibly using environmentally sound methods. In FY 2019, IHS achieved a goal to ensure that all desktop computers, laptops, and monitors have power management features enabled.



3.3 Energy Improvement Projects

This section highlights some examples of IHS sustainability projects that were identified in the FY2018 - FY2021 timeframe. The projects below focus on implementing upgrades and rectifying deficiencies to reduce energy usage.

3.3.1 Pascua Yaqui Tribal Health Clinic Energy Audit Implementation Project

The Pascua Yaqui Tribe Health Clinic in Tucson, Arizona implemented the energy efficient measures recommended in an energy audit from March 2019. The energy audit identified deficiencies present in the existing building and recommended measures including electrical upgrades, mechanical upgrades, interior improvements, and plumbing upgrades. To implement these recommendations, this project will upgrade interior and exterior lighting, install low flow water fixtures, and incorporate occupancy sensor control. Additionally, this project aims to conduct retro-commissioning to ensure that the building is performing optimally. This project will advance energy efficiency, improve indoor air quality, and reduce the energy costs to the Pascua Yaqui Tribe. This project commenced in August 2021 and is scheduled to be finished in April 2023.

3.3.2 Southcentral Foundation Green Infrastructure Project – Lighting Upgrade Project

The Southcentral Foundation conducted a lighting upgrade project in 2021 to replace existing lighting fixtures with LED lighting fixtures. This project replaced existing fluorescent and incandescent light fixtures with LED lighting fixtures at two existing buildings, the Mount Yukla Building and the Fireweed Clinic. The lighting upgrades are projected to reduce current energy usage from 43,146 kilowatt hours (kWh) per year to 7,850 kWh per year, an approximately 82% decrease. The payback period for these upgrades is estimated to be 2.33 years, with a first-year savings of $13,259. The Mount Yukla Building has shown an actual reduction of 1,089 kWh versus a projected 654 kWh, which results in savings of $174.00 per month. The Fireweed Clinic has shown an actual reduction of 6,400 kWh versus a projected 3,931 kWh, which results in savings of $1,024 per month. Overall, actual savings include 7,489 kWh and approximately $14,376 per year.

Figure 4. Lighting Upgrades at the Southcentral Foundation

3.4 Renewable Energy and Acquisitions

Renewable energy technologies are sustainable sources of energy and emit substantially fewer, if any, GHG emissions when compared to fossil fuels. Renewable energy such as solar and wind power comes from resources that are not depleted by human use. Conversely, finite resources like fuel oil, coal, or natural gas cannot be renewed at a sufficient rate for sustainable economic extraction. IHS advocates for the implementation of renewable energy technology wherever feasible and cost-effective. The EO 13834 renewable energy goal is for agencies to consume a minimum of 7.5 percent of renewable energy. IHS is currently expanding its renewable energy generation capabilities through the installation of PV systems. In FY 2019, IHS projected a 43 percent increase in renewable energy use due to the first full year of operations at the newly-constructed Fort Yuma Health Center, which includes a substantial PV system. Additionally, IHS purchases carbon-free electricity (CFE) from the electric grid where possible. In FY 2021, IHS purchased 45,761 megawatt hours (MWh) of CFE from the electrical grid.

The purchase of renewable energy certificates (RECs) helped IHS meet its renewable energy targets in FY 2018, 2019, 2020, and 2021. A REC is a tradable environmental commodity that represents the environmental attributes of power produced by renewable energy systems. The owner of a REC, which may be purchased separately from electricity, can claim the environmental benefits associated with renewable energy generation. RECs provide an accessible way for facilities that are rural or do not have access to clean electrical energy to invest in renewable energy without building a separate system. While RECs represent much of IHS's renewable energy use, IHS continues to plan and implement renewable energy projects of its own.

This section highlights some examples of renewable energy projects in the FY2018 - FY2021 timeframe that further expand the capacity for IHS to produce clean, renewable power. These sustainability projects reduce IHS's GHG emissions through the production of renewable power and increase efficiency through cost savings.

3.4.1 IHS Cass Lake Hospital Geothermal Heating and Photovoltaic Array Projects (A 2020 Green Champion Award winner!)

The IHS Cass Lake Hospital in Cass Lake, Minnesota recently launched a revitalization and expansion project. As part of this expansion, the project aims to reduce energy use by installing a geothermal heating system and a PV system. This project represents the first PV project for an IHS-owned federal health care facility in the Bemidji Area and won a 2020 Green Champion Award in Energy and Fleet Management. The 40-kilowatt (kW) roof-mounted PV system is projected to reduce energy consumption by 52,000 kWh per year, which is 3 percent of the facility's total annual electricity use. The estimated first year cost savings is $3,403.

Figure 5. IHS Cass Lake Hospital

A geothermal heating system is also being implemented in two phases at the Cass Lake Hospital. In 2021, a subsection of the geothermal well field was completed and work is ongoing to complete phase two, which includes additional wells. This portion of the project is scheduled to be completed in 2024. When completed, the two phases of the project combined are projected to result in 2,384,359 MBtu of energy savings each year and $23,634 of monetary savings each year.

3.4.2 Pechanga Indian Health Clinic Solar Energy Project

In 2021, the Pechanga Indian Health Clinic, located in Temecula, California, launched a project for the installation of a rooftop PV system that includes 78 PV solar panels. This PV system is projected to generate approximately 51,973 kWh of electricity per year, which equates to roughly 60% of the clinic's electricity usage. This project was completed in December 2022 and is anticipated to save approximately $6,795 per year in electricity costs as well as reducing the amount of GHG emissions associated with this facility.

Figure 6. Rooftop PV System at the Pechanga Indian Health Clinic

3.5 Sustainable Buildings

IHS follows several guidance documents to develop its sustainable buildings program, including the OEHE Technical Handbook, the IHS A/E Design Guide, EISA 2007, EPAct, EO 13834, EO 14008, and the Guiding Principles for Federal Sustainable Buildings. New facilities are constructed to meet the Guiding Principles and are planned to achieve at a minimum a Silver Certification under LEED.

EO 13834 directed federal agencies to focus on qualifying more buildings and building space as sustainable through the implementation of sustainability and efficiency measures. Agencies can achieve this goal through two different methods: possessing 15 percent of buildings qualifying as sustainable or possessing 15 percent of total GSF qualifying as sustainable. In FY 2018, IHS achieved 7.4 percent of total GSF that qualified as sustainable in buildings 10,000 GSF or larger (IHS, 2019b). Planned design efforts and actions in FY 2019 and 2020, including pursuing LEED certifications, led to projected increases in the amount of GSF in the IHS portfolio that would qualify as sustainable. IHS projected a total of 11.4 percent of sustainable GSF by FY 2019, a 4 percent increase from FY 2018. Additionally, IHS targeted reaching 12.2 percent of sustainable GSF by FY 2020. By continuing to design efficient buildings and implement energy and water saving measures, IHS is well on its way to reaching the goal set by EO 13834.

This section describes projects exemplify IHS's commitment to designing and constructing sustainable buildings. These projects showcase the principles of sustainability and efficiency by implementing key energy and water conservation measures.

3.5.1 Tuba City Staff Headquarters

The Tuba City Staff Headquarters is located in Tuba City, Arizona. Although it is not federally owned, the Tuba City Regional Healthcare Corporation (TCRHC) adopted the 2016 Guiding Principles for the design and construction of new housing quarters. All kitchen appliances will be EnergyStar rated and the plumbing fixtures will be WaterSense-labeled products to reduce water consumption. Additionally, the facilities were designed with energy efficient techniques and have potential energy savings compared to similar homes. Compared to the Home Energy Rating System's (HERS) baseline, it is estimated that the facility, featuring four two-bedroom units and two one-bedroom units, will save $5,978 and 20.6 tons of potential CO2 emissions annually. The HERS Index Score is a rating system that describes the energy efficiency of a home and its potential energy savings compared to similar homes.

Figure 7. Digital Simulation of Completed Tuba City Staff Headquarters

Figure 8. Digital Overview of Tuba City Staff Headquarters Layout

3.5.2 Sacred Oaks Healing Center

The Sacred Oaks Healing Center, located in Davis, California, is a newly-constructed IHS facility that was completed in 2021. The facility provides residential treatments for adolescents who are struggling with substance use and other co-occurring disorders. This facility was designed with sustainability in mind and has earned the LEED Silver designation. The two buildings at the facility are estimated to be 34.8 percent and 40.4 percent better than the baseline standards in energy consumption, which will save an estimated average of $22,954 annually. Additionally, the facility is equipped with low flow fixtures with automatic controls that will reduce potable water consumption by 38 percent and 51 percent, respectively.

Figure 9. Sacred Oaks Healing Center

3.6 COVID-19 Pandemic and Telework

The COVID-19 pandemic resulted in increased demand for utilities at IHS facilities. During the pandemic, medical facilities were often overwhelmed with patients and thus had increased demands for airflow, heating, and cooling. The COVID-19 pandemic also resulted in increases to the IHS telework program. During the pandemic, non-essential IHS personnel worked remotely to slow the spread of COVID-19. Telework reduces the GHG emissions associated with employee commuting.

3.7 Fleet Management

EO 13834 states that agencies should meet statutory requirements related to energy and environmental vehicle performance in a manner that increases efficiency and reduces waste. This includes purchasing low GHG-emitting light- and medium-duty vehicles, reducing petroleum consumption by 20 percent and increasing alternative fuel use by 10 percent annually relative to a 2005 baseline, and conducting a review of the fleet to identify opportunities to eliminate unnecessary vehicles. Moving forward, IHS seeks to follow EO 14008's directive to achieve a fleet of clean, zero-emission vehicles.

IHS is continuously replacing inefficient vehicles with more efficient vehicles, typically hybrid vehicles. IHS supports using E-85 Flex-Fuel[6] vehicles where the fuel is available. Currently, the IHS fleet includes 68 hybrid vehicles and one alternate energy vehicle that operates on diesel biofuel. Additionally, at least 352 vehicles in the IHS fleet are considered "fuel efficient." Best management practices include replacing inefficient vehicles with fuel efficient vehicles and minimizing the acquisition of sport utility vehicles unless absolutely necessary.

3.8 Projects Across the United States

IHS works to lead sustainability efforts at facilities located all across the nation. Each region has its own unique challenges and opportunities for environmental efforts. One such region is Alaska, a state known for its long, freezing winters. Over the period of this progress report, IHS has won three HHS Green Champion Awards for work performed in Alaska.

3.8.1 IHS Southeast Alaska Regional Health Consortium Lighting Renovation Project (A 2018 Green Champion Award winner!)

In 2018, IHS won an HHS Green Champion Award for replacing interior fluorescent lighting with LED technology at the Mt. Edgecumbe Hospital in Sitka, Alaska. Before this project, the facility's electrical demand on the main distribution panel had grown to 96 percent of its total capacity. This project was critical to avoid exceeding the amount of available power from the grid considering the need for the hospital to deliver high quality health care and the isolated nature of the electrical grid. Over 2,000 fixtures were updated, resulting in a 10 percent decrease in electrical energy consumption. This project alleviated concerns for overloading the grid and will save $40,648 in energy costs annually.

[6] E-85 is a blended fuel that is composed of up to 85% ethanol, a plant-based fuel, and gasoline. Flex-fuel vehicles are designed to run on gasoline or gasoline-ethanol blends.

3.8.2 Ambler Modular Biomass Boiler Project (A 2020 Green Champion Award winner!)

The IHS Rural Energy Program and the Alaska Native Tribal Health Consortium (ANTHC) are committed to implementing renewable and alternate energy solutions to ensure that rural Alaskan communities have access to affordable sanitation, potable water, and heating.

In 2020, the IHS Rural Energy Program and ANTHC installed a modular biomass boiler in the town of Ambler, Alaska in order to expand the community's capacity for energy independence. Biomass heating systems use locally harvested wood resources as fuel rather than expensive, imported heating oil. The modular biomass system, unlike a traditional biomass system, is constructed in two phases. In the first phase, the boiler module is fabricated in Anchorage, Alaska. In the second phase, the module is shipped to remote communities, such as Ambler, for onsite construction and installation. This boiler is estimated to save approximately 3,500 gallons of heating fuel oil a year, resulting in more than $22,500 in annual savings.

3.8.3 Chevak Heat Recovery Project (A 2020 Green Champion Award winner!)

The IHS Rural Energy Program and ANTHC partnered with the City of Chevak to design and construct a heat recovery system. Chevak is a rural, remote community in Western Alaska.

The heat recovery system collects waste heat produced by the community's diesel-powered generators and provides the heat to nearby facilities, including a water treatment plant and vacuum sewer plant. Heat recovery has proven to be a reliable method of increasing diesel power plant efficiency by 30 to 40 percent, and reducing costs by approximately 50 percent. In addition, the Chevak heat recovery project reduces the negative environmental impact of burning fossil fuels by offsetting roughly 12,500 gallons of fuel oil each year. This offset translates to projected savings of over $35,000 annually for the water and sewer utility. Additionally, this project led water rates to decrease from $165 a month to $85 a month, which is a substantial savings for a community where nearly 40 percent of the residents are below the federal poverty level.

CHAPTER FOUR
WATER EFFICIENCY

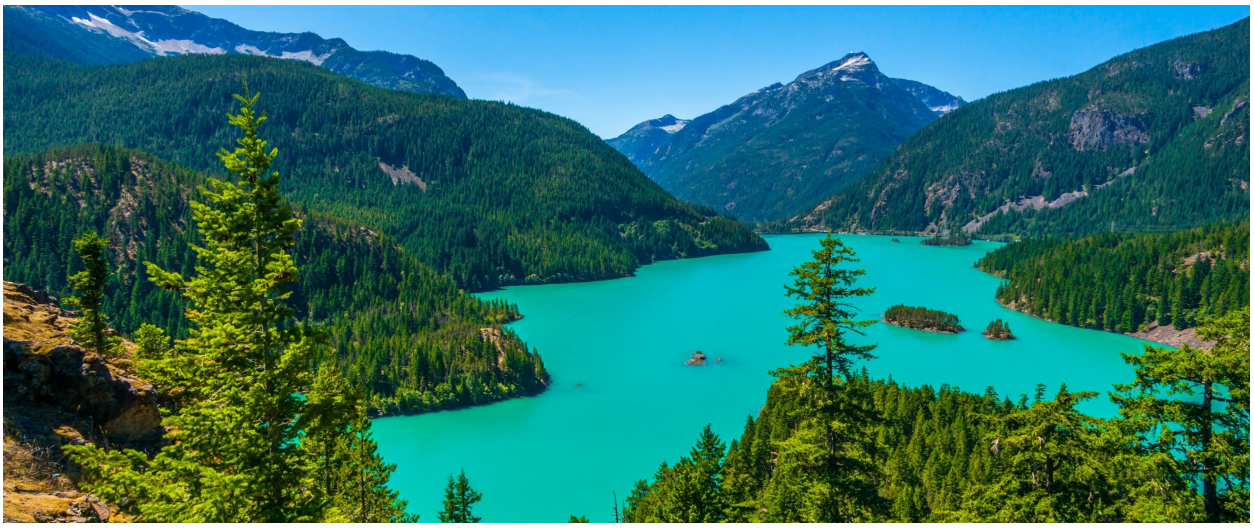
4.0 WATER EFFICIENCY

IHS is committed to furthering environmental sustainability wherever practicable through the conservation of water. To reduce water usage, existing IHS facilities are actively updating building systems and equipment with new, more efficient equipment and processes. New IHS facilities are planned to meet at a minimum a Silver Certification by LEED. The LEED rating system encourages water use reduction, rainwater management and the employment of alternative, nonpotable water sources for appropriate end uses.

For the purpose of federal water usage goals, water efficiency is measured in potable water intensity, which is the gallons of potable water per GSF of federal building space. The IHS building portfolio includes 4.5 million square feet of federally operated space. EO 13834 directed federal agencies to reduce potable water use by 20 percent relative to FY 2007, and to demonstrate continued annual progress in reducing potable water intensity. In FY 2018, IHS reported a 61 percent reduction in potable water intensity relative to the 2007 baseline (IHS, 2019b). IHS projected a 2 percent reduction in potable water intensity for both FY 2019 and 2020. IHS is proud to have met and surpassed the goal of reducing water intensity by 20 percent relative to a FY 2007 baseline.

The Guiding Principles direct new construction projects to include the:

- Design of indoor water systems to reduce potable water consumption by 20 percent compared to the baseline established by the American Society of Heating Refrigerating and Air Conditioning Engineers Standards (ASHRAE)
- Installation of water meters to enhance water use management
- Use of water efficient landscape and irrigation strategies to minimize outdoor potable water consumption
- Use of design and construction strategies that control and clean storm water runoff from IHS sites
- Use of the EPA's WaterSense-labeled products and programs



4.1 Water Conservation Measures

IHS has been incorporating water conservation measures (WCMs) into existing buildings to improve water efficiency. Examples of common WCMs being implemented at IHS facilities include xeriscaping, rainwater collection, building recommissioning, and using cooling tower water discharge for irrigation.

4.1.1 Xeriscape and Landscaping Techniques

Many IHS facilities are located in arid climates and frequently experience water shortages. When this happens, potable water must not be used for irrigation. Xeriscaping is the practice of designing landscapes or gardens with techniques that can help reduce or eliminate the need for irrigation and still be aesthetically pleasing. Choosing native plant species that are compatible with the local climate minimizes maintenance and water costs. Once established, native drought-resistant plants that can thrive off of natural rainfall alone do not require irrigation at all. These plants are watered regularly until established and then are watered only when necessary, such as during extended droughts. While not necessarily considered xeriscaping, some designs feature rock formations or gravel as ground cover to further reduce maintenance.

Figure 10. Xeriscaping at the IHS Desert Sage Youth Wellness Center

Xeriscape is based on seven water-wise landscaping principles:

1. **Planning and Design:** Allows for grouping of plant maintenance and use of terracing on slopes
2. **Soil Improvement:** Benefits plants through the use of compost and nutrients
3. **Efficient Irrigation:** Ensures all plants are watered using drip lines
4. **Low Water-Use Plants:** Uses less water by choosing native, climate-tolerant plants
5. **Mulch:** Provides cover, prevents evaporation, and limits weed growth
6. **Practical Turf Areas:** Limits the grass lawn to areas of functional use
7. **Appropriate Maintenance:** Implements necessary upkeep, such as weed control and pruning

4.1.2 Rainwater Collection

To save on potable water, some IHS facilities collect precipitation to use as irrigation for landscaping. The rain is collected in cisterns and pumped to irrigation systems as needed. The collection of rainwater eliminates the use of potable water for outdoor irrigation, helping to reach and exceed the 20 percent water consumption savings goal. This system also improves stormwater management by collecting much of the potential rainwater runoff. Water conservation is further enhanced when this practice is combined with xeriscaping.

4.1.3 Using Cooling Tower Water for Irrigation

Some IHS facilities with chillers have cooling towers that are an essential piece of equipment to remove the heat that is created as a byproduct of cooling the building. Cooling towers remove heat by the process of evaporation. Chemical concentration build-up in the cooling tower water necessitates replacement of the water to avoid blockage and corrosion. The leftover water removed from the cooling tower can then be treated and used for irrigation.

4.1.4 Building Recommissioning

Throughout a building's lifetime, chilled water, heating water, and domestic hot water system controls need to be revitalized to ensure highly functional operation and optimized performance. System efficiencies typically drop if leaks occur, filters get clogged, or controls don't work properly, resulting in higher water usage. Implementing a commissioning strategy for each building system can help minimize operational inefficiencies. Commissioning actions that can lead to water savings include leak detection, equipment blowdown optimization, water use measurement resetting, and overflow alarm validation. Ideally, recommissioning studies and follow-up actions are integrated in the building operation and maintenance plan and performed by staff on a scheduled basis.

4.1.5 Installing Low-Flow Water Fixtures

Replacing aging or outdated fixtures such as faucet aerators, shower heads, toilets, urinals and spray valves with the equivalent low-flow fixtures is a simple and cost-effective measure. For example, according to EPA's WaterSense program, WaterSense-labeled bathroom sink faucets use a maximum of 1.5 gallons per minute compared to the standard flow of 2.2 gallons per minute, which reduces the water flow by approximately 30 percent without sacrificing performance.

4.2 Water Conservation Projects

This section highlights some examples of IHS sustainability projects that have successfully incorporated WCMs to improve water efficiency. In addition to advancing IHS's water conservation goals, these projects also address other important aspects of sustainability, such as energy conservation and waste reduction.

4.2.1 Feature: Phoenix Indian Medical Center (A 2018 Green Champion Award winner!)

The first Utility Energy Services Contract (UESC) in IHS's history was executed at the Phoenix Indian Medical Center (PIMC). This facility is located in Phoenix, Arizona and contains a campus of 22 buildings with a total space of 284,754 square feet. Through the UESC, IHS was able to conduct a campus-wide energy audit that identified areas for energy and water conservation measures. Some of the measures included water system upgrades, campus-wide equipment repair and upgrades, boiler improvements, lighting upgrades, and installing a parking shade structure with a PV system.

Following the completion of these projects, PIMC is now saving a total of 9.4 billion Btu and $282,000 annually. Additionally, these projects have resulted in a 50 percent reduction in water usage, a 24 percent reduction in net usage of grid electricity, and a 3 percent reduction in natural gas usage. The success of this project garnered recognition and this project won an HHS Green Champion Award in 2018. Additionally, project team members Commander Chris Guess,

Commander Harry Turtschanow, and Monica Weaver were awarded a FEDS Spotlight Award in 2019 by the Federal Energy Management Program (FEMP) in recognition of their work on executing the first UESC in IHS history. FEDS Spotlight is a recognition program that provides an opportunity for federal agencies to shine a spotlight on federal employees who go above and beyond typical day-to-day responsibilities to achieve mission success while also cutting energy waste, reducing costs, optimizing performance, and advancing America's progress toward energy independence, resilience, and security.

Figure 11. Installed Photovoltaic System at the Phoenix Indian Medical Center

Improvements at PIMC include:

- **Water System Upgrades**: Installing low-flow fixtures including flush valves, faucets, and shower heads
- **Boiler Improvements:** Installing boiler exhaust stack economizers and replacing failed steam traps, using chilled water for sterilization condensate tempering, and removing an unused steam line
- **Ventilation Improvements:** Installing new high-efficiency HVAC rooftop units; indirect evaporative cooling; kitchen exhaust hood controls; and disinfecting ultraviolet (UV) lamps in air handling units
- **Lighting Upgrades:** Replacing interior and exterior lighting with LED fixtures and adding occupancy sensors and additional controls
- **Photovoltaic System Installation:** Installing carport and roof-mounted solar panels that will produce approximately 280 kW of renewable electricity on site
- **Transformer Replacements:** Replacing transformers with new high-efficiency units

Figure 12. Phoenix Indian Medical Center

4.2.2 Fort Yuma Health Care Center Replacement (A 2018 Green Champion Award winner!)

The new IHS Fort Yuma Health Center (FYHC) in Winterhaven, California was completed in the spring of 2018. This project consisted of new construction to replace the previous Fort Yuma Service Unit, an outdated healthcare facility that was constructed in 1936. The new clinic is a 76,300-square foot outpatient facility with a projected annual energy usage of 963 MWh, about half of the average EUI of typical properties. The new building is LEED Gold certified and has a patient capacity nearly 50 percent greater than the old healthcare facility.

The building design of the FYHC supports current theories of health care delivery and incorporates biophilic design, a design strategy that is used to create better working and living environments by directly and indirectly increasing occupant connectivity to the natural environment. The challenges and opportunities of the surrounding environment were considered carefully during the design of the facility. The “U” shaped building and its orientation shields entrances and courtyard spaces from the prevailing southwest and western winds. Additionally, this facility was designed to minimize the levels of storm water runoff from the property. Window placements in the FYHC were selected deliberately to ensure that natural sunlight supplements the installed lighting system. To minimize the use of potable water, the landscaping irrigation water will be sourced from cooling tower blowdown water, which would be otherwise wasted. To further reduce the amount of water needed for irrigation, the landscaping uses the concept of xeriscaping, which emphasizes incorporating native plants that are drought resistant and appropriate for the local climate. Additionally, rammed earth walls are used both inside and outside the building. Rammed earth is a sustainable building technique that uses compacted natural materials, in this case native soil mixed with a small amount of cement, for the construction of sturdy foundations, floors, or walls. This practice cuts down on waste and materials while embracing the local landscape.

Figure 13. Xeriscaping at the Fort Yuma Health Center

The design includes a rooftop PV system as well as a series of shaded parking areas covered with PV panels. The entire PV system has a projected annual energy production of 496 MWh per year and is estimated to provide more than half of the annual energy consumption of the facility. Provisions in the design have been made for the future installation of additional rooftop PV systems.

Figure 14. Fort Yuma Health Center

CHAPTER FIVE

GET INVOLVED

5.0 GET INVOLVED

IHS engages in several outreach and communication initiatives. Key outreach initiatives include:

- Maintaining up-to-date information on the IHS Sustainability Website
- Offering Green Tips that can be used by all members of our communities
- Encouraging nominations for the HHS Green Champion Awards Program
- Encouraging IHS employees and the general public to be mindful of our environment

5.1 Sustainability Website

IHS provides information on various sustainability topics on the Sustainability Website, such as:

- An overview of the IHS Sustainability Program, including goals, policies, and sustainability related documents
- Webpages by topic to explore further: Electronics Stewardship; Energy Management; Pollution Prevention; Sustainable Acquisitions; Sustainable Buildings, Sustainable Communities; and Water Conservation
- Green Tips to raise awareness on various sustainability issues and provide tips that can be implemented at home or in the workplace at little or no cost
- An archive of past Sustainability Annual Progress Reports
- A webpage recognizing IHS recipients of the HHS Green Champion Awards

5.2 Sustainable Design & Facilities Award

HHS created the Green Champion Awards Program to honor Operational Division staff for their work on sustainability projects throughout HHS. The efforts of these individuals, small groups, and projects have demonstrated measurable results towards both IHS and HHS sustainability goals. Staff from IHS accounted for 13 Green Champion Awards from FY 2018 through FY 2020. As of September 2021, the FY 2021 award winners have not yet been announced. Six of the IHS Green Champions from this period have already been featured in this Report and thus are not discussed below.

5.2.1 FY 2018 Awards Won by IHS Staff and Projects

Good Neighbor Award

IHS Remote Monitoring Program
Timothy Eby, Michael Eastham, Alan Mitchell

The Remote Monitoring (RM) program at the IHS ANTHC helps communities maintain their sanitation facilities and avoid catastrophic failures. This program includes 65 sanitation facilities in 46 communities across Alaska. The remote monitoring systems are designed to collect data, such as temperatures, pressures, and flow rates, and display the information online. Remote monitoring allows operators and others to troubleshoot problems at a distance and to track and

collect data which could help reduce fuel and electricity waste (ANTHC, 2017). The system also sends out alerts to operators if problems arise, which can prevent potentially catastrophic damage to pipes and equipment. The data from failure scenarios is analyzed, and new alerts are developed to prevent similar failures from occurring in other facilities. The RM program provides automated communication between Alaska's rural operators, regional Remote Maintenance Workers, and ANTHC's engineering staff. Because operators do not need to actively send and receive data to realize the benefits of the program, communities preserve their autonomy while maintaining efficient systems. The RM program facilitates the sustainability of rural sanitation facilities and in turn saves federal funds by preventing catastrophic failures.

Wellness Award

IHS Healthy Native Food Coalition
Darian R. Schaubert, Percetta Red Willow, Grant Vincent, Michael Trahan, Richard Long Feather, Petra Harmon One Hawk, Teresa Bowman, Margaret Knox Sitting Bull, Alicia Gourd, Jessica M. Crowshoe

The IHS Fort Yates Hospital built partnerships with the Standing Rock Sioux Tribe Community to establish a coalition of tribal and community members working together to build native seed gardens and educational programs. Part of these programs included promoting how gardens can benefit physical and mental health and save water while producing native organic foods that have been shown to prevent chronic disease. The team built large, low cost, energy efficient, and low maintenance vegetable and flower demonstration gardens. These gardens beautify hospital grounds while promoting a healthy image of native foods. The program also emphasizes the physical and mental health benefits of native gardening, and the economic impact of using unused areas of land to produce large amounts of healthy foods. These demonstration gardens are being used to build other community gardens used by aging services, schools, tribal BIA programs, and post offices to support local food banks and community organizations.

5.2.2 FY 2019 Awards Won by IHS Staff and Projects

Operational Efficiency Award

IHS Physical Therapy Department Reduces Paper Waste with Electronic Management of Outpatient Consults
Melina Rodriguez Upton, Shelby Petty, Douglas Henry

At the IHS PIMC, all consults placed in Electronic Health Records for physical therapy outpatient services were set to automatically print a paper copy for records management purposes. The system was also designed to automatically print any updates every time a status change occurred, which resulted in at least 1,200 individual paper reports each month. The physical therapy staff at PIMC initiated and implemented an environmentally friendly and cost savings process that removes automatic printing of patient consults, which are now exclusively performed electronically. The new initiative resulted in cost savings of $1,600 annually in paper usage, toner costs, and equipment longevity. This new onsite process complies with the sustainability goals of HHS, the IHS PIMC, and EO 13834.

5.2.3 FY 2020 Awards Won by IHS Staff and Projects

Energy and Fleet Management Award

IHS Richard Wermers, P.E.

Richard (Rick) Wermers has served as the IHS Energy Manager since FY 2015. In that time, IHS has reduced energy use intensity by 7.6 percent and water use intensity by 30 percent and has tripled the generation of onsite renewable electricity from photovoltaic solar arrays. A large part of these reductions and advancements is due to the emphasis and fostering of energy and water efficiency priorities that Mr. Wermers has imparted on the IHS Area and facility managers. He disseminates information from HHS headquarters to the Area and facility managers on energy and water efficiency, and consistently includes efficiency topics in meetings and presentations with IHS facility staff. Rick is also responsible for reporting all energy and water use data, project data, and energy funding information from hundreds of IHS buildings to HHS. In addition, he serves as an IHS focal point in other sustainability areas such as sustainable high-performance buildings, sustainability outreach, and waste and pollution prevention.

Environmental Stewardship Award

IHS William Haug, MD

Dr. William (Andy) Haug noticed the Pediatric Clinic at IHS PIMC was throwing away items that could be recycled. To help to address this issue, Dr. Haug decided to bring in containers to collect and sort various recyclable materials including cardboard, aluminum, plastic, and paper. He graciously collects these items and takes them home once or twice a week to be appropriately recycled. This has cut down on departmental waste and trash collection by the housekeeping services. Most of all, he is helping the PIMC Pediatrics community to recognize the importance of recycling and saving the environment.

Good Neighbor Award

IHS Wastewater Disposal Improvements in Sells, Arizona
Adam Hughes, P.E., Darren Ausdemore, P.E., Michael Alshuk, P.E., Lawrence Denetso, Ross Schroeder, P.E., Cauy Washburn, Nancy Sockabasin

The IHS Tucson Area Sanitation Facilities Construction (SFC) Branch serves tribal members of the Tohono O'odham Nation with projects for improving wastewater disposal facilities. One such project, completed in fiscal year 2020, is the Sells Sewer Main/Lagoon Upgrade in Sells, Arizona. This project involved the expansion of an undersized lagoon system and the installation of a larger sewer main trunk line leading into the lagoon. Additionally, repairs to 22 manholes were completed. This $4.85 million project was a joint effort between IHS, the Tohono O'odham Utility Authority (TOUA), and the EPA. Through this partnership, IHS contributed $3,261,000 in project funds and EPA contributed $1,590,432. The TOUA provided for the construction and future maintenance of all facilities installed. IHS also provided engineering design services, plans, specifications, and oversight construction inspection. As an integral component of IHS disease prevention activities, the SFC program strives to improve the health of American Indians and Alaska Natives and their communities through essential sanitation facilities such as safe drinking water and adequate wastewater disposal. Properly functioning community wastewater systems,

such as improved facilities in Sells, play a very important role in disease prevention by removing harmful viruses, bacteria, and parasites from the environment.

Green Hero Video Outreach Award

IHS Deborah Lai

Deborah Lai, Clinical Informatics Coordinator at the IHS Fort Yuma Health Center, developed a video to explain how the current mainstream food system leads to unhealthy diet and climate change, and how one can increase climate sustainability by cooking and gardening at home when possible. The film states that when it comes to tackling climate change, the focus tends to be on 'clean energy' solutions. But the global food system, which encompasses production and post-farm process such as processing and distribution, is responsible for 25 percent of the world's GHG emissions. Consumers can help climate sustainability by shifting diets from animal-based, convenient highly processed packaged foods to plant-based, whole-grain food that nourishes communities, the earth, and the environment. The film aims to empower more people to stop global warming and start the positive transformation by cooking and gardening at home whenever possible.

CHAPTER SIX
CONCLUSION

6.0 CONCLUSION

Sustainability is at the heart of the IHS Mission - to raise the physical, mental, social, and spiritual health status of the American Indian and Alaska Native people to the highest possible level. This Sustainability Progress Report summarizes the steps IHS has taken to conserve resources, implement sustainable practices into standard agency operations, and establish itself as a good steward of the environment. This report highlights exemplary IHS sustainability projects and the dedicated IHS personnel who work to make those projects possible. Additionally, this Sustainability Progress Report helps IHS maintain accountability and transparency for our impact on the environment, and facilitates our efforts to address the President's EOs regarding environmental sustainability. IHS will continue to support a robust sustainability program and strive to meet today’s needs without compromising the ability of future generations to meet their needs.

7.0 BIBLIOGRAPHY

(ANTHC, 2017). Alaska Native Tribal Health Consortium. *Remote monitoring gives water plant operators peace of mind.* March 2017.

(CEQ, 2020). Council of Environmental Quality. *Guiding Principles for Sustainable Federal Buildings and Associated Instructions.* December 2020.

(CEQ, 2019). Council of Environmental Quality. *Implementing Instructions for Executive Order 13834*. April 2019.

(DOE, No Date). Department of Energy. *Crystalline Silicon Photovoltaics Research*. No date.

(EPA, 2022). Environmental Protection Agency. *Electronic Product Environmental Assessment Tool (EPEAT)*. November 2022.

(EPA, 2023). Environmental Protection Agency. *Scope 3 Inventory Guidance*. February 2023.

(IHS, 2018). Indian Health Service. *Indian Health Service 2018 Sustainability Implementation Plan*. March 16, 2018.

(IHS, 2019a). Indian Health Service. *Architect / Engineer Design Guide*. November 2019.

(IHS, 2019b). Indian Health Service. *Indian Health Service FY 2020-2021 Sustainability Implementation Plan*. 2019.

(OMB, 2017). Cynthia Vallina, Office of Management and Budget. *Executive Order 13834 Efficient Federal Operations and FY 2017 OMB Scorecard*. 2017.

(Yuma Sun, 2016). Yuma Sun*. Ground finally broken on clinic for local tribes.* January 2016.