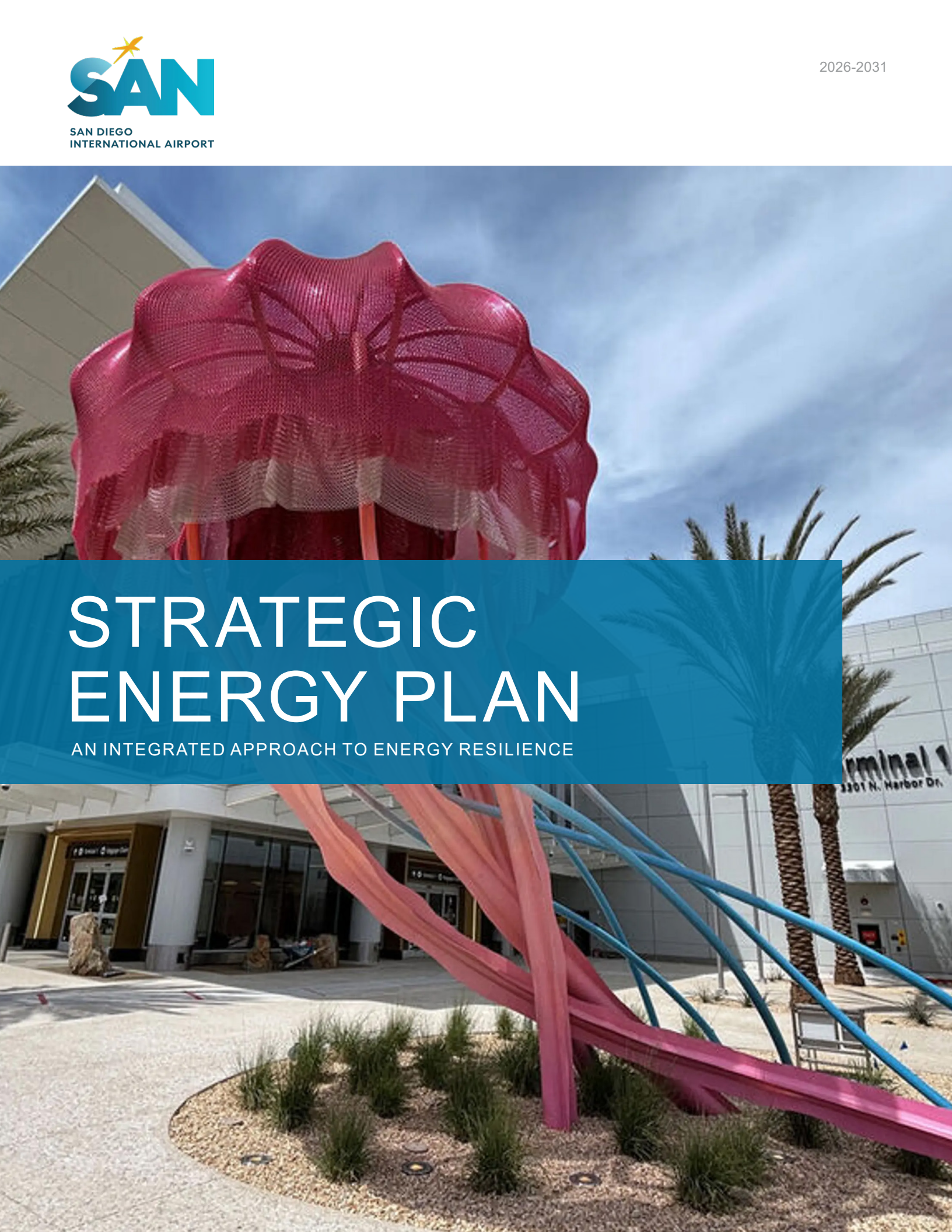




STRATEGIC ENERGY PLAN

AN INTEGRATED APPROACH TO ENERGY RESILIENCE

Disclaimer

The Strategic Energy Plan is provided as a summary of current efforts by and future goals of the San Diego County Regional Airport Authority. The information provided in the Strategic Energy Plan has been obtained from sources believed to be reliable but it is not a guarantee as to accuracy or completeness. It is provided for reference only and does not purport to include every item that may be relevant, nor does it purport to present full and fair disclosure with respect to any financial reports, transactions, bonds, notes and other obligations related to the San Diego County Regional Airport Authority or San Diego International Airport within the meaning of applicable securities laws and regulations. Nothing in the Strategic Energy Plan may be construed to imply that specific projects, means or methods have been approved, funded or committed to by the San Diego County Regional Airport Authority or require it to take any specific action in the future.



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EXECUTIVE SUMMARY

The San Diego County Regional Airport Authority (Authority) is committed to building an enduring and resilient enterprise by effectively managing its financial, social and environmental risks, obligations and opportunities.

The Authority has established itself as a sustainability leader both regionally and across the airport industry. As operators of San Diego International Airport (Airport or SAN), the Authority understands the intricate relationship between energy performance and airport security, recognizing that this interdependence requires a comprehensive vision and strategy to ensure long-term sustainability.

This commitment to sustainability is embodied in the New Terminal 1 (New T1) project at SAN, which replaces the original 58-year-old terminal with a world-class modern, efficient facility designed to elevate the passenger experience and meet the region’s growing travel demand. Thoughtful design, expanded amenities, and high-performance building systems reflect the Authority’s emphasis on operational efficiency, passenger comfort, and long-term environmental stewardship.

Sustainability is a core focus of the New T1 program at SAN. The new terminal operates on 100 percent carbon-free electricity, while the adjacent Terminal 1 Parking Plaza supports low-emission transportation with 185 electric vehicle (EV) charging stations, an additional 349 EV-ready spaces, and over 284 bicycle parking spaces.

Complementing the terminal redevelopment, the Airside Improvements Project upgrades critical airfield infrastructure supporting New T1, including the realignment and reconstruction of taxiways, aircraft parking aprons, electrical systems, and stormwater management systems. The project reduces emissions by replacing fuel trucks with an underground fuel-delivery system and incorporates a 900,000-gallon cistern to capture and reuse stormwater. Both projects have been designed to withstand future climate impacts in alignment with the City of San Diego’s Climate Action Plan, reflecting a comprehensive and forward-looking sustainability strategy.

This approach has garnered significant industry recognition, with the Airside Improvements Project earning an Envision Gold Award from the Institute for Sustainable Infrastructure and the New T1 designed to achieve Leadership in Energy and Environmental Design (LEED) Gold certification. Together, these coordinated landside and airside enhancements improve operational efficiency, reduce emissions, and reinforce the Airport’s role as a vital transportation hub and economic driver for the San Diego region.

The Strategic Energy Plan (STEP) establishes the Authority’s approach to achieving its goal of being a world-class thought leader in the provision of cost-effective energy strategies that are environmentally responsible and fully aligned with Airport operation and development.

The updated Strategic Energy Plan provides SAN with a modern framework for energy management that is focused on enhanced resilience, continued efficiency and decarbonization, and cost savings.

An Integrated Approach to Energy Management

The purpose of the STEP is to provide a framework for rethinking how the Authority manages its energy resources while preparing to accommodate passenger growth, development projects, and the added variability of a changing climate.

Specifically, the plan addresses key issues of energy efficiency, electrification, conservation, on-site energy generation and storage, enhanced monitoring of key energy metrics, and mechanisms to actively engage the broad spectrum of Airport stakeholders.

The plan presents an integrated approach that will enable the Airport to grow its operations while protecting the San Diego region’s limited resources.

The STEP is a core element of the Sustainability Management Program (SMP), the Airport’s overarching framework for measuring environmental sustainability progress (see **Figure 1**). The Program comprises seven individual plans including biodiversity, carbon neutrality, clean transportation, climate resilience, strategic energy, water stewardship, and zero waste.



Figure 1: Core Elements of the Airport’s Sustainability Management Program

Steps to Achieving a Robust Energy Program

The STEP provides a roadmap for the Authority that defines the energy goals of one of the world’s most sustainable airports, balancing the provision of operationally aligned actions with the flexibility to accommodate inevitable changes. These changes in airport operation, climate, and technology are expected to occur over the next 20 years.

The STEP will evolve as the design, operation, and environment of the Airport changes. It will be updated

at least every five years, with ongoing coordination among internal and external stakeholders to ensure alignment with the Authority’s overall vision.

The Authority has identified five focus areas of the STEP, which when combined, are intended to cover the full spectrum of topics necessary to provide a robust and comprehensive energy program. The five focus areas are summarized in **Figure 2** below.

1

Conservation and Efficiency

A. Sub-Monitoring

B. Energy Auditing

C. Retro-Commissioning

D. Monitoring Strategy

E. Energy Performance Design Targets

F. Efficiency/Capacity Linkage

G. Engagement and Education

2

Decarbonization

A. Decarbonizing the Central Utility Plant

B. Electrify Concessions

C. Cost Effective Renewable Energy Generation

D. Supporting Electric Vehicle Load Growth

E. Airport Carbon Accreditation

3

Energy Resilience

A. Load Assessments, Forecasts, and Prioritization

B. Implement Microgrid Control Intelligence Systems and Expand Capabilities

C. Utility Supply Redundancy

D. Partnerships

4

Cost Containment

A. Demand Side Management

B. Funding Mechanisms

C. Identification of Effective Metrics

5

Regional and Industry Leadership

A. Third Party Frameworks

B. Sharing Best Practices to Build Industry and Regional Momentum

C. Engagement with Business Partners in Energy and Sustainability Goals

D. Business Intelligence

E. Periodic Strategic Energy Plan Validation

F. New and Emerging Technologies

Figure 2: Strategic Energy Focus Areas

INTRODUCTION



Creating the Sustainable and Resilient Airport

The San Diego County Regional Airport (Authority) is globally recognized for its leadership in sustainability and innovation. As the operator of San Diego International Airport (SAN), the Authority understands the critical role energy and resource efficiency play in both present-day operations and long-term planning. SAN has achieved several national firsts in sustainable infrastructure: it was the first U.S. airport to earn LEED Platinum certification for a major terminal project—the Green Build—and the first to receive the Institute for Sustainable Infrastructure’s (ISI) Envision Platinum award for landside improvements. In 2024, SAN further solidified its commitment to sustainability when the Airside Improvements Project, part of the New T1 program, earned an Envision Gold Award. This recognition highlights ongoing efforts to modernize and future-proof airport infrastructure. Additionally, since 2011, SAN has published annual sustainability reports aligned with the Global Reporting Initiative (GRI), becoming the first U.S. airport to adopt the internationally recognized sustainability reporting framework and reinforcing its position as a trailblazer in airport sustainability.

The Authority is committed to going beyond expectations, strengthening the resilience of its operations, and managing energy responsibly. This includes improving energy efficiency, generating clean, independent power, modernizing for future needs, preparing for rising costs, and building a more resilient airport.

The Airport recognizes its responsibility to address climate change by reducing greenhouse gas (GHG) emissions and advancing decarbonization, while continuing to provide reliable, high-quality airport services for the region. As the busiest single-runway commercial airport in the nation and a recognized leader in sustainable aviation, the Authority is committed to strengthening energy security and integrating sustainable practices across its operations. To support this effort, the Authority published its first Strategic Energy Plan (STEP) in 2017 and updated it in 2019; this document serves as the latest refresh of the 2019 plan.

The STEP outlines long-term goals and strategies to improve energy efficiency, support conservation, and align with the New T1 Program and Capital Improvement Program (CIP). These efforts help position the Airport to transition toward cleaner, more reliable energy sources, offset GHG emissions, and prepare for rising energy costs in a manner that balances environmental stewardship with financial responsibility. This update to the STEP ensures that the Authority’s energy goals, targets, and implementation strategies reflect current operating conditions, evolving regulatory requirements, and emerging technologies.

SAN’s Energy-Carbon Connection

The airport industry continues to expand its focus on sustainability and reducing greenhouse gas emissions. One of the key frameworks guiding this shift is the Airport Carbon Accreditation (ACA) program,¹ the only institutionally endorsed, global carbon management certification program for airports. ACA uses internationally recognized methodologies to evaluate airports on their ability to measure, reduce, and offset emissions through seven progressive levels of certification.

In 2022, SAN became one of only three North American airports, and the only airport in California, to achieve Level 4+ accreditation. To reach this milestone, SAN demonstrated continued reductions in emissions from sources under its direct control, such as building energy use and fleet vehicles; aligned its emissions reduction targets with a science-based pathway; implemented a comprehensive Carbon Management Plan; offset Scope 1 and 2 emissions, along with staff business travel, using high-quality carbon offsets; and collaborated with tenants and other stakeholders to address Scope 3 emissions.

¹ <https://www.airportcarbonaccreditation.org/accredited-airports/> (accessed 15 April 2026)

Key initiatives and accomplishments that contributed to achieving Level 4+ accreditation include:

- **100% Renewable Electricity:** SAN is one of the first major campuses to fully enroll in San Diego Community Power’s “Power100 Champions” program, sourcing 100% renewable, carbon-free grid electricity.
- **Ground Transportation Emissions Reduction:** Transportation Network Companies (e.g., Uber, Lyft) serving SAN must achieve a fleetwide average fuel efficiency equivalent to 52 mpg.
- **Zero-Emission Shuttle Fleet:** SAN operates 33 all-electric buses, one of the largest zero-emission shuttle fleets in the region, transporting passengers and employees around the airport campus.
- **The Good Traveler Program:** SAN pioneered a voluntary carbon offset program that allowed travelers to mitigate the climate impact of their flights affordably and effectively.
- **Sustainable Aviation Fuel (SAF) Advocacy:** SAN is actively partnering with airlines and SAF producers to promote policy incentives and infrastructure that support broader use of low-carbon aviation fuels.
- **Electrified Equipment:** SAN successfully transitioned 50% of its ground support equipment (GSE) fleet to electric power.



SAN’s Energy-Resilience Connection

Energy is the lifeblood of an airport. From fueling aircraft to ensuring the continued safety of all airport staff and passengers, energy makes it possible to keep SAN up and running. Similar to how SAN’s energy mix impacts its ability to meet its carbon goals, the Airport’s energy infrastructure plays a central role in maintaining safe, secure, efficient operations.

The Authority can enhance its future operational resilience by carefully considering the role of its various energy assets during normal and irregular operations. To this end, the Authority has conducted extensive energy resilience planning as part of this update to the STEP and also as part of ongoing maintenance of the Airport’s emergency operations procedures. For instance, the Authority’s Emergency Management Team regularly reviews the Airport’s power outage plan to ensure orderly operations in the event of a loss of grid-supplied electricity. As outlined in **Table 1** below, the Airport structures its energy resilience planning around two scenarios.

Table 1: Energy Resilience Scenarios

Scenario	Key Loads Sustained (Non-Exhaustive)	Desired Operational State
Short-Duration Outage (<4 hours)	- Life-safety and security systems - Aircraft navigation equipment - Airfield lighting - Passenger boarding/deplaning - Baggage handling - Limited concessions - Heating/ventilation/air conditioning	Maintain key airport functions until regional power is restored.
Extended Regional Outage (4 hours or more)	- Life-safety and security systems - Aircraft navigation equipment - Airfield lighting - Passenger boarding/deplaning	Conduct an orderly shutdown and safely evacuate the airport until regional power is restored.

Critical Airport Energy End Uses (Non-Exhaustive)

Facility life/safety systems (fire, egress, etc.)

Emergency Operations Center / communications

Passenger boarding or deplaning

Aircraft fueling

Airfield lighting

Navigational aids

Stormwater pumping

These energy resilience scenarios have fundamentally different desired outcomes and required infrastructure. SAN’s most critical systems—such as life-safety, aircraft navigation systems, airfield lighting, and emergency coordination—are currently backed up through a variety of Authority- and Federal Aviation Administration (FAA)-owned generators. Additionally, the New T1 provides enhanced capability to operate boarding bridges during power outages.

To maintain other key airport functions during a short-term outage requires additional investment. For example, the Authority may need to invest in additional battery energy storage beyond its currently installed system. Fortunately, the Authority is well positioned to expand on its current energy infrastructure like its 12 kV distribution loop to provide enhanced resilience capabilities with relatively modest capital expenditure. Core to this strategy is also increasing the Authority’s ability to control the rising demand on its electrical system. As additional EV and equipment charging comes online, and as the Authority pursues electrified alternatives to its natural gas boilers, it must also consider energy management controls and load shedding equipment that prioritize critical loads during emergencies.

Airport Energy Profile

Airport Energy Use

Energy is consumed across airport facilities and infrastructure to support a wide range of functions, including lighting, heating and cooling, domestic hot water, baggage handling equipment, jet bridges, ground power units, and electric vehicle (EV) charging. As shown in **Figure 3**, in Calendar Year 2025, the Airport consumed approximately 58 gigawatt-hours (GWh) of electricity (equivalent to 58,000 MWh) and more than 288,000 therms of natural gas, while

generating roughly 8 GWh (8,000 MWh) of on-site solar energy. Despite this level of energy consumption, energy-related GHG emissions have declined due to increased on-site renewable generation and the Authority’s purchase of zero-carbon electricity. In 2025, the Airport saw an increase in total energy consumption, driven by the opening of New T1 and increased vehicle/equipment charging.

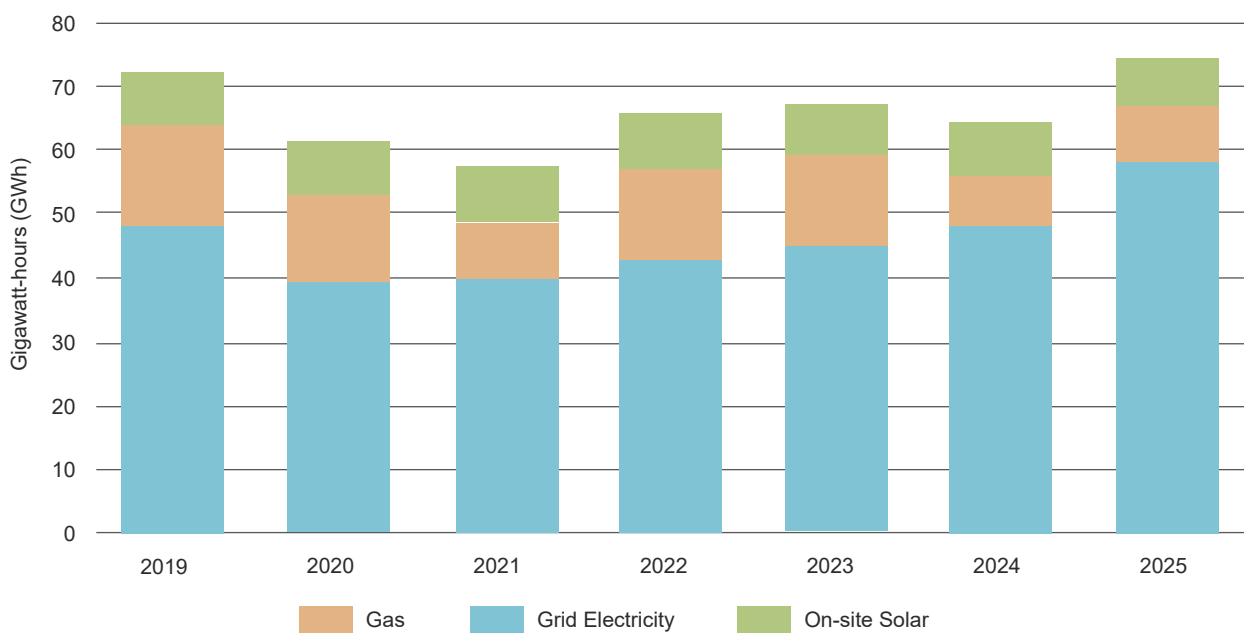


Figure 3: Historical Energy Use

The following sections summarize the Airport’s primary energy end uses, with a focus on facility operations and transportation electrification.

Facility Energy Consumption

As the largest consumers of energy on campus, airport facilities offer a critical opportunity to lead on energy efficiency and emissions reduction. Guided by the Carbon Neutrality Plan which outlines the Authority’s approach to managing GHG emissions and achieving carbon neutrality under the Airport Carbon Accreditation program, the Airport has prioritized both high-performance design and energy optimization strategies across its building portfolio.

SAN manages approximately 3 million square feet of building space under its energy management and

sustainability programs, including terminal buildings, administrative offices, maintenance facilities, support buildings, and other airport-operated structures. The majority of facility energy use at SAN is associated with process loads, including ground power systems, passenger boarding bridges, baggage handling systems, and plug loads. Additional significant end uses include lighting, heating, cooling, ventilation, and domestic hot water, with terminals accounting for approximately 75 percent of total Airport energy consumption.

The Authority recognizes that its facility portfolio is both the largest consumer of energy and provides the greatest opportunity for enhancing performance through the deployment of energy efficiency and on-site generation strategies.

The New T1 program incorporates numerous sustainability and energy performance measures intended to support the Authority's goal of building a more efficient and resilient building portfolio. Key energy-related features include a highly efficient heat recovery chiller, high-performance curtain wall glazing to reduce solar heat gain, electrified transportation infrastructure, gate electrification, and up to 4 MW of additional solar PV generation paired with a 4 MWh Battery Energy Storage System (BESS).

In addition, the Airport continues to improve the performance of existing facilities through a comprehensive approach that includes energy audits, retro-commissioning, and system upgrades. These measures are designed to reduce energy consumption, enhance occupant comfort, and decrease operational emissions.

By integrating carbon reduction into both new construction and existing building performance, the Airport is building a more efficient, resilient, and climate-aligned operational footprint.



Electric Vehicle and Equipment Charging

As the Airport advances transportation electrification, electrical demand associated with EV and equipment charging is expected to increase significantly. SAN currently supports a growing network of landside EV charging stations and airside charging infrastructure for electric ground support equipment (eGSE), including electric baggage tractors, belt loaders, and other ramp equipment. The Airport is in the process of deploying AmpCarts and other electrified operational equipment to reduce the use of combustion-based equipment across airside operations. As the first commercially deployed battery-powered mobile charging units, AmpCarts provide expedited, flexible charging solutions for cargo carrier eGSE on the north side of the airfield (see **Figure 4**).

The New T1 program will further expand this infrastructure through installation of 200 eGSE chargers and 15 Level 2 EV chargers. As transportation electrification accelerates across both landside and airside operations, EV and eGSE charging will become an increasingly important component of the Airport's future energy demand profile.



Figure 4: The Authority procured AmpCarts to reduce combustion-based equipment use.

Figure 5 below shows SAN's projected annual energy consumption and demand, illustrating total energy consumption—including on-site solar generation and purchased utilities—and projections incorporating anticipated future EV projects. As transportation electrification continues to reshape airport operations, projected energy demand at SAN is expected to evolve significantly, with increasing reliance on EV and eGSE charging infrastructure influencing both future consumption patterns and long-term energy planning priorities across the Airport.

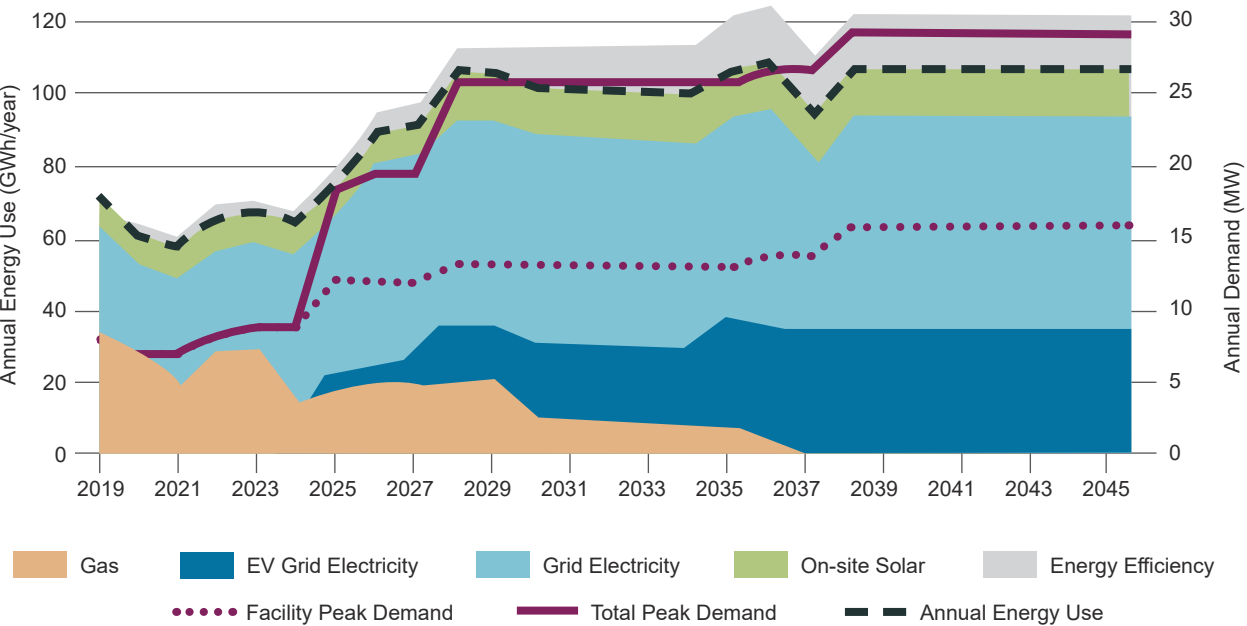


Figure 5: Annual Energy Consumption and Demand



Airport Energy Infrastructure

San Diego International Airport's energy profile reflects the complexity of a modern aviation hub, where energy is consumed not only by buildings but also by critical operational systems and electrified transportation infrastructure that support day-to-day airport functions. **Figure 6** provides a snapshot of the existing energy infrastructure at the Airport.

tandem with growth in passenger activity, aircraft operations, and facility square footage; however, this increased demand has been partially offset by improvements in energy efficiency, expansion of on-site renewable energy, and a progressively cleaner utility grid, resulting in a reduction in energy-related greenhouse gas emissions.

Together, these assets form the backbone of the Airport's energy ecosystem and represent a significant opportunity to improve efficiency, reduce emissions, and enhance resilience in support of the Authority's long-term sustainability goals. Historically, overall energy consumption at the Airport has increased in

Looking forward, continued electrification of airport systems and equipment is expected to be a primary driver of future energy demand growth, as end uses transition from fossil fuels to electricity in support of decarbonization objectives.

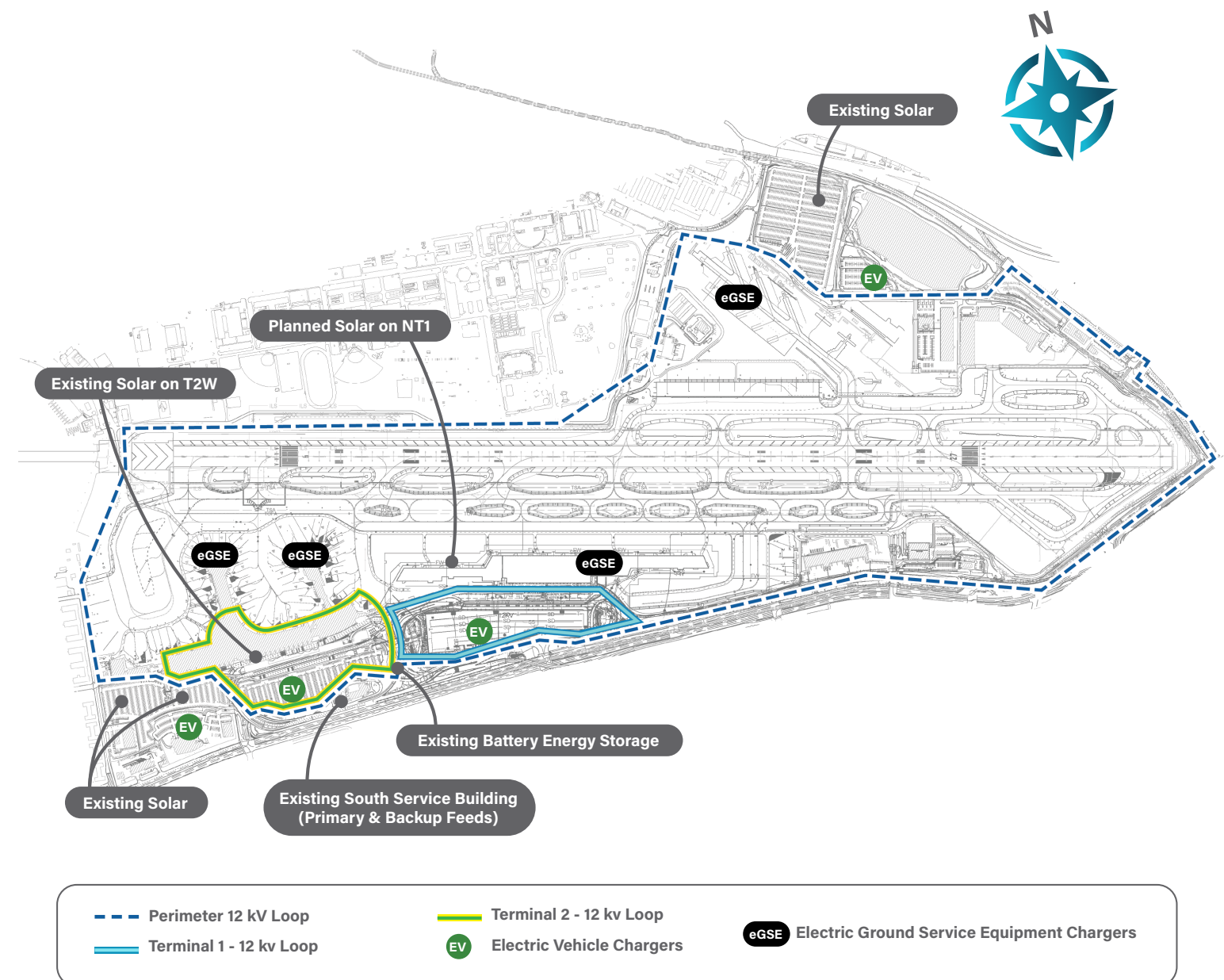


Figure 6: Existing Energy Infrastructure at the Airport

In addition to consuming energy across its facilities and operations, SAN operates a diverse portfolio of systems that generate, store, convert, and distribute energy across the campus. These assets—including the campus-wide electrical distribution network, Central Utility Plant (CUP), on-site solar photovoltaic (PV) systems, and BESS—are critical to maintaining reliable, efficient, and resilient operations. Together, they enable the Airport to manage utility demand, optimize energy use, integrate renewable generation, and support long-term decarbonization objectives.

The following sections summarize the Airport’s primary energy infrastructure systems and their role in supporting airport operations and sustainability performance.

Electrical Distribution System

SAN has made strategic investments to modernize its energy infrastructure, ensuring long-term reliability, efficiency, and sustainability. The Airport is connected to the regional utility grid operated by San Diego Gas & Electric (SDG&E) through three substations. In 2014, SAN enhanced its campus-wide electrical network by installing a 12-kilovolt (kV) loop, establishing a flexible and resilient distribution system.

This network not only improves local energy management and load balancing but also strengthens

the Airport’s ability to maintain operations during grid disruptions. The system enables efficient control over power flows, helps avoid blackouts, and reduces utility costs through meter consolidation and improved load management.

Central Utility Plant

The passenger terminals are currently served by a CUP, which supplies chilled and hot water and generates heat via five natural gas boilers (see **Figure 7**). The CUP currently meets the existing heating and cooling demands of the terminals, but it also represents a significant percentage of the Airport’s Scope 1 emissions.

In line with the Authority’s carbon reduction goals and the aviation industry’s net zero goals, the Airport commissioned a study of the options for eliminating the use of natural gas at the CUP. This study reviewed the most technologically feasible options for electrifying the CUP and proposed using air source heat pumps (ASHPs). The proposed approach could be coordinated with certain planned boiler and chiller retirements, as well as anticipated renovations at existing terminals. Because the Airport receives a zero-carbon supply of electricity from the grid, electrifying the CUP would reduce SAN’s stationary Scope 1 emissions by more than 80%, while simultaneously optimizing CUP operations.



Figure 7: SAN’s Central Utility Plant, as seen from above.

Renewable Energy Generation

The Authority has made a significant commitment to on-site renewable energy generation at the Airport, with over 3.3 MW of solar PV energy installed on the roof of Terminal 2 West and on the shade structures in the adjacent parking lot. In 2016, the Authority entered into a Power Purchase Agreement (PPA) for the installation of 2.2 MW at the Northside Economy Parking Lot, bringing the Airport’s total solar energy generation capacity to 5.5 MW. This 5.5 MW capacity has remained consistent over the last several years, providing stable renewable energy output for the Airport’s operations. These existing installations offset over 15% of the Airport’s annual energy consumption. With the completion of all phases of the New T1 in 2028, the Airport will add another 4 MW, increasing its total solar energy generation capacity to 9.5 MW.

Looking to the future, the Authority is considering further development of on-site solar, including the possibility of an additional 5 MW at the Northside Economy Parking Lot and up to 3 MW at the Rental Car Center (RCC).

Energy Storage

The Authority installed a 2 MW / 4 MWh BESS in 2021 (see **Figure 8**). Integrated with SAN’s existing PV solar arrays, the BESS plays a critical role in reducing energy charges during peak demand periods, which account for roughly 40% of the Airport’s monthly electricity costs. This advanced system allows the Airport to store excess solar energy, shift energy loads, and reduce consumption of grid electricity during high-cost periods.



Figure 8: SAN’s 2 MW Battery Energy Storage System.

Positioning for the Future of Airport Energy

SAN has established a strong foundation for strategic energy management through sustained investment in efficient facilities, electrified infrastructure, renewable energy generation, modernized utility systems, and campus-wide energy resilience measures. Since the last STEP update in 2019, the Authority has made meaningful progress in advancing energy infrastructure, expanding renewable energy and battery storage deployment, supporting transportation electrification, and optimizing facility performance, further reinforcing its commitment to long-term sustainability and operational resilience.

As operations continue to expand and electrification accelerates across building and transportation systems, the Airport’s energy profile is becoming more complex, requiring a coordinated, forward-looking planning approach.

These efforts have advanced emissions reduction, operational efficiency, and long-term resilience, while also highlighting the need for continued optimization and targeted investment to meet future demand amid evolving regulatory requirements, shifting utility rate structures, emerging technologies, and ongoing airport growth.

The following chapters of this STEP evaluate the Airport’s progress since the 2019 STEP update and identify actionable strategies to further enhance energy performance across all facets of airport operations. These chapters outline opportunities for improvement across the areas of Conservation and Efficiency, Decarbonization, Energy Resilience, Cost Containment, and Regional and Industry Leadership, providing a comprehensive roadmap for optimizing energy use and infrastructure at every level of airport operations while advancing the Authority’s broader sustainability and decarbonization objectives.

Conservation and Efficiency



CONSERVATION AND EFFICIENCY

The Airport will actively promote a culture of energy efficiency and conservation through quantifiable metrics and demonstrated energy leadership.



Overview

Since the Strategic Energy Plan update in 2019, the Airport has made meaningful progress advancing conservation and efficiency initiatives across its campus and embedding energy performance considerations into both capital planning and ongoing operations. A major area of advancement has been the expansion and modernization of the Airport’s sub-monitoring infrastructure, with campus-wide sub-monitoring being incorporated through active Capital Improvement Plan (CIP) projects and required in new facilities. Notably, New T1 was fully sub-monitored and commissioned in September 2025, with additional sub-monitoring installations continuing through current construction efforts. In parallel, the Authority has matured its strategic energy monitoring capabilities through implementation of the SkySpark platform, which has served as the Airport’s energy dashboard for more than five years and continues to expand through integration of sub-monitoring, Heating, Ventilation, and Air Conditioning (HVAC) analytics, and standardized workflows for identifying and evaluating efficiency opportunities.

The Airport has also strengthened its energy management processes through implementation of targeted audits, retro-commissioning, and ongoing commissioning practices. Many low-cost energy conservation measures identified through prior audits have been completed or are under evaluation, while retro-commissioning efforts have been executed through utility-supported programs, including HVAC optimization work in Terminal 2 East. The Authority has further institutionalized commissioning practices by leveraging third-party commissioning agents, hiring dedicated retro-commissioning support, and incorporating ongoing commissioning requirements into major development programs such as the Terminal 1 Redevelopment Program. Together, these efforts have established a strong operational foundation for strategic energy management and have positioned the Airport to further optimize building performance, improve operational efficiency, and pursue deeper energy savings through the initiatives outlined in this chapter.

Building on the Airport’s proven track record of implementing energy conservation and efficiency measures, this STEP advances those efforts by identifying new opportunities for continued progress. The foundational steps of a comprehensive energy strategy remain: minimizing demand through conservation and maximizing efficiency in energy use. Historically, energy conservation has delivered the greatest return on investment, and the Airport has already realized significant benefits through targeted improvements in energy use and management. By continuing to reduce overall energy demand, the need for new energy generation and infrastructure is diminished, resulting in lower capital costs particularly for capital-intensive investments like on-site renewable energy generation and battery energy storage. This approach enables the Airport to right-size future alternative energy solutions by first maximizing conservation efforts, while introducing energy performance targets for new facilities,

encouraging energy-conscious behavior among occupants, enhancing system controls, and replacing outdated equipment with more efficient technologies.

Metrics

To track the performance of energy conservation efforts, two energy use intensity (EUI) metrics are used to measure progress toward the reduction goals.

- Energy use (kBtu) per square foot (sf) of the overall airport facility portfolio within the Airport.
- Energy use (kBtu) per passenger who travels through the Airport.

The energy use per passenger metric is used to measure year-over-year change in comparison to the 2015 baseline year. As of 2025, the Authority has reduced energy use per passenger by 17%, and it is on track to meet its 2028 goal of a 20% reduction (see Table 2).

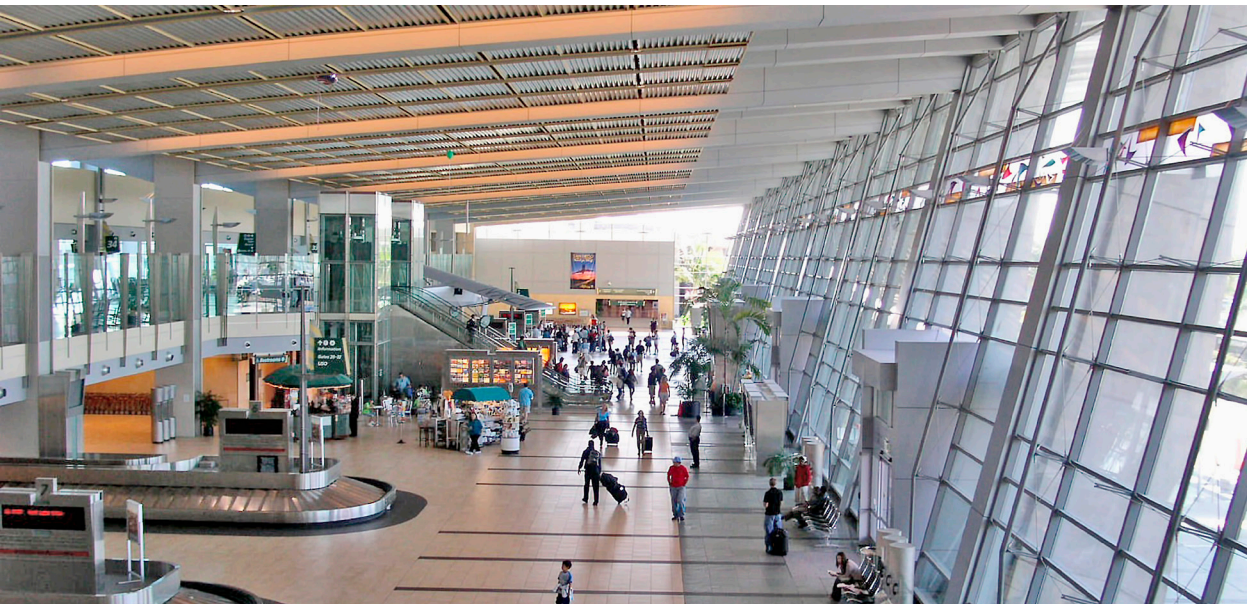
Table 2: Energy Efficiency Targets

Energy Use Intensity Reduction (kBtu per passenger from 2015 baseline)	Target Year
10%	2022
20%	2028
30%	2035

2025 Status -17%

A large, stylized green checkmark graphic.

ON TRACK



Critical Areas of Focus

- **A. Sub-Monitoring**
- **B. Energy Auditing**
- **C. Retro-Commissioning**
- **D. Monitoring Strategy**
- **E. Energy Performance Design Targets**
- **F. Efficiency/Capacity Linkage**
- **G. Engagement and Education**

B. ENERGY AUDITING

Regular energy auditing provides a mechanism to ensure that all of the Airport’s energy efficiency and conservation efforts are properly maintained and remain effective throughout their lifecycle.

The energy auditing process will identify potential opportunities for energy performance improvements in facilities. Buildings function as complex systems, and they generally become sub-optimal over time in terms of energy consumption. Energy auditing and subsequent retro-commissioning are not a one-time event, but rather a long-term, ongoing maintenance activity, providing periodic “tune-ups” for the facilities. Energy auditing is the first step in recalibrating and optimizing the buildings, ensuring they continue to operate at peak efficiency and that any issues are caught and addressed. Energy auditing provides a diagnostic tool to identify potential savings, but further efforts are required to ensure that measures are actually implemented to capture cost and energy savings.

An effective auditing process will include reviewing all facilities at least once every five years, and balancing the benefits of auditing with the costs to do so. The auditing results should be used to implement projects in a multi-tier approach, based on how long a project will take to pay back its cost in savings, with strategies bundled as required to achieve the optimal implementation timeline. This approach will allow small- and mid-scale measures to be implemented quickly through the existing CIP and maintenance protocols.

In its next airport energy audit, the Authority should consider including terminal concessions within the audit scope to maximize reduction potential. Collaborating with concessionaires on energy efficiency projects is also key to implementing the Authority’s Stakeholder Partnership Plan, a requirement of the ACA program at the Authority’s current Level 4+.



A. SUB-MONITORING

A vital component of effective energy conservation and efficiency improvement is the implementation of a robust sub-monitoring program to provide Airport stakeholders and tenants with detailed energy performance analytics. Collecting more specific and granular data helps inform both the Airport and its tenants of their energy usage, supporting more informed operational and planning decisions. Data collected through sub-monitoring tracks peak demand, annual consumption, and daytime usage trends, while also supporting broader energy management efforts across the Airport campus.

Installation of sub-monitors has enabled the Airport to collect detailed energy consumption data, supporting the identification, quantification, and prioritization of energy projects, as well as ongoing performance verification following implementation. Historically, most tenant leases did not directly account for utility consumption; however, tenant sub-monitoring, now installed and largely commissioned as part of the New T1 project, is beginning to address this gap, with collected data currently under review to identify any issues. Expanding on this effort, the campus-wide sub-monitoring CIP is underway, with installations planned across the CUP, Terminal 2 West, Terminal 2 East, Elevated Departure

Roadway, USO, and the Terminal 2 Parking Plaza. Once fully operational, direct monitoring of tenant energy use will enable more equitable cost allocation between the Airport and its tenants while discouraging excessive consumption and creating incentives for improved energy efficiency.

Additionally, the Airport is actively expanding its SAN Green Concessions Program in alignment with its broader sustainability goals. This award-winning program incentivizes tenant participation in waste reduction, recycling, and food recovery efforts, supporting both regional and statewide targets, including the City of San Diego’s 90% waste diversion goal by 2035. As the Airport continues to push toward deeper waste reduction outcomes, the program will also emphasize energy conservation as a critical pillar. Through enhanced data collection, targeted outreach, and infrastructure planning, the Authority will collaborate closely with tenants to integrate energy-efficient practices into concessions operations. This includes boosting employee awareness, optimizing operational controls, and recognizing high-performing concessionaires who demonstrate leadership in both energy use and sustainable waste management.



C. RETRO-COMMISSIONING

A comprehensive airport energy audit will identify opportunities for new, higher efficiency technologies to be installed as well as for existing systems to be reset and operated in line with their original design parameters. When robustly implemented, retro-commissioning (Retro-Cx) commonly can achieve up to 10 percent reductions in energy consumption.

Moving forward, the Authority should continue prioritizing retro-commissioning for existing facilities. To support implementation, retro-commissioning requirements should be incorporated into the Authority's Design and Construction Standards, building upon existing energy efficiency provisions. Additionally, the Authority should enforce adherence to existing commissioning and retro-commissioning processes to ensure maximum effectiveness.



D. MONITORING STRATEGY

The Authority has made significant progress in its energy monitoring capabilities with the deployment of the SkySpark analytics platform. The software performs analytics on data pulled directly from the building automation system (BAS) and allows the Authority to create energy use dashboards, trendline charts, and reports. The system is still being set up to accommodate inputs from the expanded submonitoring across the campus and incorporation of HVAC data points.

The Authority's future actions pertaining to energy monitoring should focus on the continued and enhanced use of SkySpark to drive decision making. For example, the Authority should develop a process, in collaboration with the Business Intelligence team, to systematically analyze SkySpark data and use it regularly to improve facility energy performance. Additionally, training will be critical to ensuring that key Authority staff can access and interpret data made available through SkySpark.

If implemented, several groups within the Airport organization will be able to put this data to use for strategic activities. Facilities Management Department (FMD) staff will be able to benchmark between similar energy consumers, such as the baggage handling systems and tenants. Tenants that are outliers in terms of energy consumption will be identified, allowing for further investigation into energy usage. FMD staff will also be able to better understand the Airport's energy needs, providing guidance on the future plans for CUP improvements and optimization.

Planning, Noise, and Environment (PNE) staff will be able to compare the energy usage information at monthly and yearly levels for the different end uses that consume energy, as well as the types of fuel used to produce energy. They may also evaluate actual performance against the Airport's energy goals. Furthermore, this information will be valuable for informing the annual SAN Stewardship Report for the Airport. Senior leadership will have access to a single portal for metrics and trend information related to energy, allowing them to see a snapshot of the Airport's performance in relation to the goals, and its progress in following the roadmap to a more resilient energy future.



E. ENERGY PERFORMANCE DESIGN TARGETS

Beyond incentivizing energy conservation in tenant lease negotiations, the Airport will embed its stewardship mission into the design phase of capital projects - both new construction and tenant improvements. This represents a crucial time in the development process, before any construction occurs, where energy usage can be greatly controlled and limited through proactive design and at relatively lower costs by eliminating the need for retrofits.

For new construction, an emerging trend is performance-based energy targets. Setting performance-based targets, such as a maximum EUI benchmark for a facility, enables flexibility in the design and construction of a project to achieve the desired outcome. This flexibility allows for greater opportunities in innovation and lifecycle cost savings to be uncovered by the design or design-build team that may have otherwise been missed. The Airport deployed this strategy in the design of the New T1. Moving forward, there is opportunity to improve that process by incorporating SAN-specific benchmarks into design standards that are informed by current building performance. Additionally, energy use language used in project specifications should be improved to have adequate enforceability of requirements.

For tenant spaces, Tenant Design Guidelines are a central repository for design and operational considerations, and they are an ideal vehicle for implementing energy efficiency and control standards

for tenant-led projects. Design review teams will be educated on these guidelines and will review tenant projects in light of the Airport's goals for carbon reduction and energy conservation. Equipped with the technical knowledge to review the impact of projects on energy, staff will be able to influence energy usage through their review process. Tenant Design Guidelines should be modified to incorporate EUI requirements, and the Authority should ensure that design reviews of tenant improvements include adherence to energy efficiency benchmarks.



F. EFFICIENCY/CAPACITY LINKAGE

Conservation and efficiency will play an increasingly important role in reducing the need for costly electrical capacity upgrades at the Airport. As electrical loads increase with the addition of new facilities, expanded EV charging, etc., a heightened focus on efficiency will help to offset some of the demand growth. This, in turn, will reduce the scale

of upgrades that the Authority may need to make to its electrical supply and distribution infrastructure. Moving forward, the Authority should ensure that planned efficiency upgrades are considered in electrical capacity modeling and project planning to avoid overbuilding or overinvesting in electrical infrastructure.



G. ENGAGEMENT AND EDUCATION

Tenants range from small kiosk operators to major aircraft maintenance facilities. Without its tenants, the Airport will not be able to perform many of its major functions, from moving passengers, cargo, and visitors to providing rental cars and concessions. However, the collective environmental footprint of the Airport's business partners is greater than the Authority's own footprint, and they therefore must be fully engaged in the Airport's energy management efforts. The Airport recognizes that in order to use energy in the most efficient way possible, engagement with all stakeholders is crucial. Energy education will be established as an initiative spanning all Airport stakeholders. The previously described sub-monitoring allows tenants to understand their energy consumption and how it relates to campus wide energy use, enabling incentives to integrate conservation measures into their business.

By providing a framework in which tenants can operate more sustainably, the Airport will further improve its energy efficiency by engaging the entire campus. As a global leader in sustainability, the Airport is well positioned to provide educational opportunities to all of its stakeholders, enabling them to leverage the energy and cost savings benefits of increased efficiency and conservation.

The Airport will utilize all of its engagement channels to reach its business partners, identifying opportunities where the Airport can make the greatest impacts towards its cumulative energy usage and shared progress towards conservation. The ultimate goal is to foster a strong culture of energy stewardship among all members of the Airport ecosystem, from the Authority's full organization to all of its business partners.

IMPLEMENTATION

Table 3: Conservation and Efficiency—Implementation Plan

Focus Area	Critical Activities		Responsibility	Time Horizon
A. Sub-Monitoring	A.1	Incorporate sub-monitoring requirements within the airport design specifications for all new construction projects	ADC	0-2 years
	A.2	Evaluate ways to leverage enhanced sub-monitoring data to incorporate into the SAN Green Concessions Program	FMD PNE	1 year
	A.3	Continue deployment of sub-monitoring on all new facilities	FMD ADC	Immediate/Ongoing
B. Energy Auditing	B.1	Complete the next iteration of a campus-wide Level 2 energy audit, inclusive of terminal concessions	FMD	2 years
C. Retro-Cx	C.1	Review design and construction guidelines for tenant refurbishments and consider incorporation of retro-commissioning requirements into existing language around energy efficiency	FMD ADC	2 years
	C.2	Ensure consistent adherence to existing commissioning and retro-commissioning processes for use within the airport	FMD	Ongoing

Table 3: Conservation and Efficiency—Implementation Plan *continued*

Focus Area	Critical Activities		Responsibility	Time Horizon
D. Monitoring Strategy	D.1	Develop a process, in collaboration with the Business Intelligence team, to systematically analyze sub-metering data in SkySpark energy dashboard and ensure data is used regularly to improve facility energy performance	FMD BI	1 year
	D.2	Ensure key Authority staff are trained in accessing and interpreting data made available through SkySpark	FMD	2 years
E. Energy Performance Design Targets	E.1	Incorporate evidence-based energy use intensity (EUI) targets into Airport Design Standards, such as SAN-specific benchmarks informed by current building performance	FMD ADC	0-2 years
	E.2	Revise EUI language in project specifications to ensure adequate enforceability of requirements	FMD ADC	0-2 years
	E.3	Incorporate energy performance requirements into Tenant Design Guidelines, informed by a concessions audit of existing tenants	ADC TBD	2 years
	E.4	Enhance internal design review process to include evaluation of energy performance of proposed tenant solutions	ADC ATOps	2 years
F. Efficiency/Capacity Linkage	F.1	Ensure planned efficiency upgrades are considered in electrical capacity modeling and project planning to avoid overbuilding/overinvesting in infrastructure	FMD ADC	2 years
G. Engagement and Education	G.1	Continue regular energy education programming for Authority staff through quarterly Lunch & Learns, and for tenants via the SAN Green Concessions Program	PNE	Ongoing

ADC Airport Design & Construction ATOps Airport Terminal Operations BI Business Intelligence FMD Facilities Management LBD Landside Business Development PNE Planning, Noise, & Environment TBD Terminal Business Development

Decarbonization

2



DECARBONIZATION

The Airport will promote the use of zero carbon energy sources by the Authority and its tenants.



Overview

A multifaceted approach to energy usage must be initiated in order to meet the Authority’s goal to reduce GHG emissions to 80% below 2015 levels by 2035. The Airport will generate its own renewable energy where technically and financially feasible, and it will take advantage of existing and prospective contracting methods to purchase cleaner and more affordable energy. This increased reliance on renewable power will be complemented by further developing already successful environmental stewardship efforts at the Airport, including the electrification of the airside and landside vehicle fleet.

Participation in the ACA program, culminating in SAN’s achievement of Level 4+, demonstrates the Airport’s leadership in carbon management and environmental stewardship. This milestone reflects a comprehensive strategy that includes expanding the use of carbon-free electricity, transitioning to all-electric vehicles, supporting carbon-emission reductions by airline and ride share partners, and enabling carbon offset options for passengers.

Looking to the next five years, continued decarbonization of the Airport’s energy supply will hinge on transitioning the CUP away from natural gas and continuing to support the growth of vehicle and equipment electrification across the Airport.

Metrics

A key metric for assessing the Airport’s progress towards decarbonizing is the percentage of the Airport’s energy supply portfolio that comes from renewable sources, both on-site and from off-site utilities.

The metrics that will be monitored include:

- Percentage of energy generated by on-site renewable energy sources.
- Total percent of energy demand met by renewable sources (including off-site).

Critical Areas of Focus



A. Decarbonizing the Central Utility Plant (CUP)



B. Electrify Concessions



C. Cost Effective Renewable Energy Generation



D. Supporting Electric Vehicle Load Growth



E. Airport Carbon Accreditation



A. DECARBONIZING THE CENTRAL UTILITY PLANT (CUP)

As grid-supplied electricity becomes increasingly clean, the primary source of facility-related greenhouse gas emissions for the Airport will shift to natural gas combustion for space and water heating. In the absence of renewable natural gas or biogas alternatives, achieving a truly decarbonized airport will require the gradual electrification of these end uses. Although electricity market dynamics continue to evolve, the Authority remains committed to maintaining a zero-carbon electricity supply while advancing long-term decarbonization strategies.

As part of these efforts, the Authority initiated a study to evaluate feasible pathways for eliminating the use of natural gas within the Airport’s CUP. Because the Airport receives a zero-carbon electricity supply from the grid, electrification of the CUP was identified as a significant opportunity to reduce stationary Scope 1 emissions, with the potential to achieve more than 80% reductions during the initial phase of implementation alone. The CUP electrification study was therefore undertaken to evaluate the

operational, financial, and infrastructure implications associated with transitioning the CUP away from natural gas-fired systems while supporting the Airport’s long-term carbon reduction objectives. Through this analysis, it was determined that the most technologically feasible pathway for reducing GHG emissions associated with terminal heating and cooling operations would be replacing the existing natural gas boiler system with air-source heat pumps (ASHPs).

With the Airport’s selection of ASHPs as the preferred decarbonization pathway, several enabling projects and implementation actions have been identified to support a successful transition over the coming years. Because the Airport’s existing heating infrastructure was originally designed around higher-temperature hot water generated by natural gas boilers, modifications to the current heating hot water (HHW) and air distribution systems will be required before lower-temperature ASHP systems can be effectively integrated. Since ASHPs operate

most efficiently at reduced supply temperatures, generally in the range of 130°F–140°F, optimization of the existing HHW system is a critical prerequisite to electrification.

Additionally, connected air handling units (AHUs) will require assessment and, where necessary, retrofit or coil modifications to maintain heating performance under lower-temperature operating conditions.

As a result, the implementation actions outlined in this section focus on validating system sizing assumptions, preparing existing infrastructure for lower-temperature operation, and further reducing reliance on natural gas across airport facilities. Key actions include completion of a detailed HHW study, evaluation and retrofit of AHUs, repair of the hot water distribution system, refinement of ASHP sizing and siting recommendations, and continued assessment of opportunities to eliminate natural gas use across ancillary Airport facilities.

 B. ELECTRIFY CONCESSIONS

Once the CUP is fully decarbonized, the largest remaining use of natural gas at SAN will be terminal concessions. To address this, the Airport is prioritizing the elimination of natural gas in all future terminal renovations and new concession spaces, building on the precedent set by the New T1 program.

New T1 showcases a fully electrified concessions approach, featuring approximately 30 new restaurants

and retail spaces that rely on electric equipment to deliver a modern, efficient passenger experience while reducing emissions. Expanding this model across all concessions will be critical to completing the Airport’s transition away from fossil fuels and advancing its long-term sustainability goals.



 C. COST EFFECTIVE RENEWABLE ENERGY GENERATION

Solar energy plays a critical role in the Airport’s broader decarbonization strategy. While San Diego Community Power currently supplies 100% zero-carbon electricity to the Airport, on-site solar generation remains an important component for directly offsetting electricity use, enhancing energy independence, and reducing long-term exposure to utility cost fluctuations.

Expanding on-site solar capacity will allow the Airport to ensure the continued availability of low-carbon electricity in the future while strengthening resilience and controlling operating costs over time. To support these objectives, a targeted capacity and feasibility study was undertaken for additional solar PV and BESS deployment at the New T1. This effort evaluated the maximum feasible rooftop PV capacity, the benefits of integrating BESS for energy cost optimization, and the technical basis for future procurement, considering

factors such as projected load growth, spatial constraints, and the Airport’s utility rate structure. While solar and BESS were initially assessed independently, the study ultimately recommended a combined deployment to better achieve sustainability goals and improve financial performance. Analysis of a 3.28 MW PV system paired with BESS capacities ranging from 2–8 MWh indicated that configurations with 2–4 MWh of storage would provide the most favorable outcomes, with a 4 MWh system emerging as the preferred option due to its higher internal rate of return and shorter simple payback period. While the Authority recognizes that on-site solar generation and battery storage represent only part of the solution for maximizing cost-effective renewable energy, it will continue to actively evaluate additional pathways to reduce emissions.

 D. SUPPORTING ELECTRIC VEHICLE LOAD GROWTH

The Airport’s ongoing electrification of vehicle fleets and continued expansion of EV charging infrastructure is a central component of its broader decarbonization strategy and will significantly reshape future energy demand profiles. Supporting

this transition will require coordinated planning between the Airport’s energy strategy and the Clean Transportation Plan to ensure that growing electrification needs are met in a cost-effective and operationally sustainable manner.



As EV adoption accelerates across both landside and airside operations, the Authority must proactively align charging infrastructure development with long-term transportation electrification goals to avoid fragmented or reactive deployment. To manage this growth effectively, the Airport will evaluate projected EV load demand against forecasted available electrical capacity to identify constraints and determine whether infrastructure upgrades are required. In addition, the Authority will evaluate intelligent charge management solutions that can optimize charging behavior, reduce peak demand impacts, and strategically shift or defer loads. Together, these approaches will enable the Airport to support EV expansion while maintaining grid reliability and minimizing unnecessary capital investment.

E. AIRPORT CARBON ACCREDITATION



The Airport continues to demonstrate industry leadership in sustainability through its participation in the ACA program, achieving ACA Level 4+ certification in 2022. This designation reflects the Airport's significant reductions in Scope 1 and Scope 2 GHG

emissions, alignment with science-based emissions reduction targets, utilization of high-quality carbon offsets, and ongoing collaboration with tenants and stakeholders to address Scope 3 emissions sources. Achieving and maintaining ACA Level 4+ requires not only continued emissions reductions, but also robust data collection, performance tracking, and stakeholder engagement to support transparent carbon management practices across airport operations.

As the Airport advances toward its long-term decarbonization goals and strives toward ACA Level 5 certification, comprehensive energy management and carbon accounting will play an increasingly important role in demonstrating measurable performance improvements and coordinated emissions reductions across the airport campus. Expanded energy monitoring and analytics will provide greater visibility into facility-level energy consumption patterns, support identification of operational efficiency opportunities, and strengthen collaboration with tenants and stakeholders to advance collective emissions reduction initiatives.

IMPLEMENTATION

Table 4: Decarbonization—Implementation Plan

Focus Area	Critical Activities	Responsibility	Time Horizon
A. Decarbonizing the Central Utility Plant (CUP)	A.1 Complete heating hot water (HHW) study to understand thermal load and supply temperature setpoints, factoring in future terminal developments and efficiency projects	FMD	1 year
	A.2 Complete air-source heat pump (ASHP) feasibility study, including revalidation of sizing recommendations (per outputs of A.1), finalization of siting recommendation, and refined cost estimate	FMD PNE	1 year
	A.3 Assess and retrofit, where needed, air handling units to accommodate lower temperature hot water	FMD	3 years
	A.4 Repair hot water distribution system to enable transition to lower temperature hot water leaving the CUP	FMD	3-5 years
	A.5 Evaluate opportunities to eliminate natural gas used for facility heating or domestic hot water in ancillary facilities	FMD	0-2 years

Table 4: Decarbonization—Implementation Plan continued

Focus Area	Critical Activities	Responsibility	Time Horizon
B. Electrify Concessions	B.1 Eliminate the use of natural gas in terminal concessions for all future terminal renovations and new concession spaces	FMD TBD ADC	3 years
C. Cost Effective Renewable Energy Generation	C.1 Continue phased procurement of solar energy generation as part of NT1	FMD ADC	0–2 years
	C.2 Ensure solar is considered and evaluated for all new facility development, including tenant-owned facilities	FMD ADC	Ongoing
D. Supporting Electric Vehicle Load Growth	D.1 Interface with Clean Transportation Plan to support growth in EV charging infrastructure	FMD ADC PNE	Immediate/ Ongoing
	D.2 Compare EV load projections to forecasted available capacity to identify limitations (upper bounds) on EV charger installation -or- additional electrical capacity investment needed	FMD ADC PNE	Immediate/ Ongoing
	D.3 Evaluate role of charge management solutions to mitigate the EV charging impacts on electrical capacity	FMD ADC PNE	Immediate/ Ongoing
E. Airport Carbon Accreditation	E.1 Calculate the carbon footprint associated with Authority energy use	PNE	Annually
	E.2 Leverage enhanced sub-metering data to inform actions under the Authority's ACA Stakeholder Partnership Plan	PNE	0-2 years

ADC Airport Design & Construction

ATOps Airport Terminal Operations

BI Business Intelligence

FMD Facilities Management

LBD Landside Business Development

PNE Planning, Noise, & Environment

TBD Terminal Business Development

Energy Resilience

3



ENERGY RESILIENCE

The Airport aspires to maintain operational continuity during power outages to continue serving the traveling public.

Overview

Energy resilience is the ability of energy systems to prepare for and adapt to changing conditions and withstand and recover rapidly from disruptions. The Airport’s existing energy infrastructure is already ahead of many other peer airports thanks to consolidated electrical infrastructure, multiple utility feeders, campus-wide solar panels, and a BESS, that is currently deployed to reduce peak demand utility costs.

These existing infrastructure assets, combined with backup generators which support critical life safety loads, and a recently upgraded monitoring and controls system, allows the Airport to maintain power to all operations in all but the most extreme regional grid outage scenarios.

However, with growing demand increasing the possibility of peak usage exceeding electrical supply capacity and the increase of extreme weather events placing greater stress on the grid, more unplanned power outages are likely. The Airport has an opportunity to build on its existing energy resilience posture to enable more of its load to be met by on-site generation.

Unlike many of the other focus areas in this STEP, the airport industry lacks a consistent framework for assessing resilience and defining clear operational resilience targets. As such, there is an opportunity for SAN to establish its own targets that best represent its operational needs and the economic value of maintain energy supply during outages.¹

Leading up to the update of the STEP, the Authority conducted several rounds of internal stakeholder engagement on the topic of energy resilience. The Authority held an energy resilience workshop in December 2024 to educate key staff on the concepts of energy resilience and collaboratively prioritize critical energy loads at the Airport. As a follow-up to this workshop, staff also completed a survey about

load prioritization under multiple outage scenarios, which directly supported development of the recommendations contained in the STEP. Several more targeted meetings took place with Authority staff, including technical working sessions with Facilities Management (FMD) and Airport Design & Construction (ADC) departments. In January 2026, Authority staff briefed the Executive Leadership Team on the proposed energy resilience strategy and integrated their feedback into the final approach presented here.

SAN’s strategy builds on research from the United States (U.S.) Government Accountability Office’s (GAO),² National Academies of Science (NAS) Airport Energy Resilience Roadmap,³ FAA,⁴ and input from the Airport operations, facilities, and emergency management staff, to establish the goals and strategies presented in this section.



1 According to the International Air Transport Association and Reuters, major power outages at Heathrow Airport and Atlanta International Airport have resulted in an estimated \$80-\$145 million and \$50 million losses respectively for airlines.

2 U.S. GAO. (2023). Airport Infrastructure: Selected Airports’ Efforts to Enhance Electrical Resilience. <https://www.gao.gov/products/gao-20-298>

3 National Academies of Science. (2024). Airport Energy Resiliency Roadmap. <https://nap.nationalacademies.org/catalog/27491/airport-energy-resiliency-roadmap>

4 FAA. (2019). Order JO 6030.20G – Electrical Power Policy Including Change 1. https://www.faa.gov/regulations_policies/orders_notices/index.cfm/go/document.current/documentNumber/6030.20

Metrics

The Airport will measure the success of its energy resilience initiatives by evaluating its ability to maintain operations during grid power outages or disruptions at varying levels of service. As shown in **Table 5**, the resilience goals established for the Airport are intended to be both realistic and ambitious, balancing operational feasibility with the long-term objective of strengthening energy security and reducing vulnerability to external power disruptions.

A primary resilience objective is to sustain critical Airport operations for a minimum of four hours during a power outage, aligning with the FAA Electrical Power Policy for critical loads.⁴ Achieving this capability would exceed minimum code requirements for many Airport-owned systems and support continuity of operations

during emergency events, utility interruptions, or other grid reliability challenges. To support this objective, the Airport will track several key resilience performance metrics, including:

- The percentage of critical operational loads capable of operating in island mode.
- The number of hours that critical loads can be sustained using on-site energy generation and/or energy storage systems.

These metrics will provide a quantifiable framework for assessing the Airport’s progress toward greater operational resilience while also informing future investments in distributed energy resources, microgrids, backup generation, and energy storage infrastructure.

Table 5: Resilience Goals

Timeframe	Resilience Goal
Short-Term (2030)	Establish a microgrid to utilize existing assets to maintain critical airport operations
Long-Term (2035)	Expand on-site generation and storage to enable up to 4 hours of islanded operations

Critical Areas of Focus



A. Load Assessments, Forecasts, and Prioritization



B. Implement Microgrid Control Intelligence Systems and Expand Capabilities



C. Utility Supply Redundancy



D. Partnerships



A. LOAD ASSESSMENTS, FORECASTS, AND PRIORITIZATION

Understanding how and where energy is used across the Airport is a key step toward improving resilience. This effort begins with identifying and categorizing different types of loads, such as critical systems that must remain operational during an outage, important operational systems, and non-essential loads. This classification helps define how the Airport should respond during constrained conditions or power disruptions.

In parallel, the Airport should evaluate how energy demand is expected to change over time. This includes considering factors such as future development, seasonal variations, and the growing impact of EV

charging. By anticipating these changes, the Airport can better plan for future capacity needs and ensure that infrastructure investments are aligned with long-term growth.

Based on this understanding, the Airport can define clear priorities for how energy is used during normal and emergency conditions. This includes establishing strategies to reduce or shift non-essential loads when necessary, ensuring that critical operations remain supported. Supporting studies, such as updates to electrical system coordination, will help confirm that the system operates safely and reliably under these conditions.



B. IMPLEMENT MICROGRID CONTROL INTELLIGENCE SYSTEMS AND EXPAND CAPABILITIES

The ability to store energy onsite will provide considerable flexibility in how and when the Airport uses clean power generated by its PV systems.

Improving energy resilience will require the Airport to enhance monitoring and control of its energy resources and electrical systems. While several advanced systems are already in place, they currently operate with limited coordination, reducing operational flexibility and reliability.

This effort will focus on improving integration between existing control systems and identifying where additional capabilities are needed. Key actions include evaluating the current control architecture, increasing visibility across the electrical system, and enabling more coordinated operation of on-site energy resources such as solar, battery storage, and backup generation.

A key step will be the implementation of a centralized Energy Management System (EMS) that can provide a unified view of the airport's energy system and support real-time decision-making. This system will help balance energy supply and demand, manage how and when different resources are used, and support smooth transitions during changing operating conditions, including potential outages.

In addition, the Airport will explore opportunities to further enhance system flexibility, such as improving how different parts of the electrical system can be coordinated and controlled. These improvements will support a more integrated and responsive system, capable of adapting to both normal operations and unexpected events.



C. UTILITY SUPPLY REDUNDANCY

The Airport currently has two primary electrical feeders that are at maximum capacity. The capacity of the alternate feeder was recently increased, providing some redundancy during non-peak periods. With anticipated demand growth from new airport development projects and EV charging, the Airport will need to accommodate future demand loads by utilizing both increased existing as well as proposed new SDG&E service connections.

The Airport's 2023 Electrical Infrastructure Study, recommended increasing capacity of south side main feeders and installing new electrical service with

distribution loops on the north side to accommodate north side development projects such as the rental car center EV charging. A new electrical service would include a service building similar to the existing south service which would provide an alternative supply location, increasing supply redundancy in the future. The Airport's control system will also need to be modified and upgraded accordingly with increased new service capacity. SAN will continue to rationalize demand projections and refine the required capacity for electrical feeders through its overarching Energy Master Plan.



D. PARTNERSHIPS

When airports, utilities, and other stakeholders work together, they can anticipate risks earlier, coordinate responses faster, and invest in solutions that benefit the entire region. Investigating in partnerships such as a demand management strategy with SDG&E may help the Airport increase the value of its distributed energy resources including solar PV and BESS while also supporting the grid during peak or emergency conditions. In addition, the Authority may explore opportunities to determine the role of the Airport in

partnership with public and private agencies across the community, city, or county in a regional outage scenario. Finally, educating airport stakeholders such as airlines, tenants, and concessions, etc. on energy resilience enables them to understand the operational, financial, and safety risks of power interruptions, which builds support for proactive investments at the Airport. It also strengthens coordination across departments and partners, creating a unified approach to keeping the Airport operational during utility interruptions.



IMPLEMENTATION

Table 6: Energy Resilience—Implementation Plan

Focus Area	Critical Activities		Responsibility	Time Horizon
A. Load Assessments, Forecasts, and Prioritization	A.1	Assess and prioritize loads and distributed energy resources	FMD ATOps	0 - 2 years
	A.2	Conduct an updated protective device coordination study to enhance system reliability, optimize breaker, fuse, and relay settings so faults are isolated to affected circuits, and maintain system resilience as electrical loads increase and new distributed energy resources are integrated	FMD	0-2 years
	A.3	Develop an electric vehicle-charging load management strategy tailored to EV demand management to enable cost savings and reduce loads during expensive peak demand periods	FMD PNE	0-2 years
B.Implement Microgrid Control Intelligence Systems and Expand Capabilities	B.1	Conduct a gap analysis of the distributed automated control (DAC) system to determine areas of improvement	FMD	0-2 years
	B.2	Enhance Supervisory Control and Data Acquisition (SCADA) / DAC automation to support system reconfiguration, load shedding, and operational control	FMD	0-2 years
	B.3	Implement real-time microgrid orchestration to manage microgrid assets (e.g., tiered loads and black-start sequencing)	FMD ADC	2 years
	B.4	Implement an EV charging load management scheme integrated with the microgrid control system to prioritize critical facility loads by shedding non-critical EV charging demand during outages or peak demand periods	FMD PNE TBD	5 years
	B.5	Expand on-site BESS capacity to improve resilience, enhance load management flexibility, and support future microgrid capabilities	FMD ADC	5 years
	B.6	Expand on-site solar PV generation capacity to increase renewable energy production, reduce grid dependence, and strengthen long-term energy resilience	FMD ADC	10 years

Table 6: Energy Resilience—Implementation Plan continued

Focus Area	Critical Activities		Responsibility	Time Horizon
C. Utility Supply Redundancy	C.1	Upgrade the capacity of south service electrical feeders to support future south-side loads	FMD ADC	5 years
	C.2	Install a new electrical service on the north side of the airport to support future north-side loads	FMD ADC	10 years
D. Partnerships	D.1	Evaluate the feasibility and benefits of participating in a virtual power plant (VPP) contract to generate revenue	FMD	0-2 years
	D.2	Explore opportunities to define the Airport's role during regional outage scenarios in partnership with public and private agencies	PNE	2 years
	D.3	Educate airlines, tenants, concessions, etc. on energy resilience projects planned or implemented so they understand impacts to their operations	FMD ATOps PNE TBD	2 years

ADC

Airport Design & Construction

ATOps

Airport Terminal Operations

BI

Business Intelligence

FMD

Facilities Management

LBD

Landside Business Development

PNE

Planning, Noise, & Environment

TBD

Terminal Business Development

Cost Containment

4



COST CONTAINMENT

The Airport is committed to achieving its energy goals in a financially responsible and feasible way.



Overview

In an era of rising energy costs and increasing operational demands, cost containment is a critical component of the Airport’s energy strategy. The STEP is designed to prioritize investments that deliver long-term financial value while supporting the Airport’s sustainability and resilience objectives. Proposed projects should be evaluated using Total Cost of Ownership (TCO), which assesses lifecycle costs and benefits, and Sustainable Return on Investment (SROI), which further accounts for the monetized value of carbon reductions. Together, these financial assessments help ensure that energy improvements pursued through the Airport’s capital program are both economically and operationally viable.

The Airport will continue to manage energy generation and consumption strategically to control costs, improve efficiency, and reduce exposure to energy price volatility. This includes proactive energy demand management,

ongoing optimization of building and system performance, and strategic use of available funding opportunities and incentives. Through careful planning, implementation, and continuous operational evaluation, the Authority aims to maximize energy efficiency, minimize unnecessary expenditures, and prioritize projects that provide measurable long-term value to the Airport and its stakeholders.

Metrics

- The Airport’s progress toward these objectives will be tracked using the following metrics:
- Total energy cost by source and end use.
 - Cost savings and/or revenue generation from demand response programs or BESS.

Critical Areas of Focus

-  **A. Demand Side Management**
-  **B. Funding Mechanisms**
-  **C. Identification of Effective Metrics**

A. DEMAND SIDE MANAGEMENT

Airport electricity expenditure is predominantly broken down into two main categories: energy usage and demand charges. SDG&E demand and capacity charges, related to the peak electricity demand rather than total consumption, are significant components of the bill and equate to over 35% of the Airport’s monthly electricity costs. The Airport intends to investigate the implementation of a demand response and management system, which will pull from the Airport’s various building management systems and utilize predictive logic to reduce peak demand. This system will also limit electricity demand during peak hours, during which the SDG&E consumption charge is higher than at other hours, further reducing charges for electricity use. By measuring factors such as total energy use, time of use, trends for each quarter and year, and more, the Airport will be able to identify where energy and money can be used more efficiently, and where it can augment cost containment efforts. Through active use of the controls at the Airport’s disposal, the Airport can continually refine its energy infrastructure to maximize its return on investment.

Furthermore, demand-side management is critical for managing vehicle electrification at the Airport, as EV and eGSE charging have been identified as rapidly growing contributors to future energy demand. The New T1 program further expands this infrastructure through the installation of 200 eGSE chargers and 15 Level 2 EV chargers. As transportation electrification accelerates across both landside and airside operations, EV and eGSE charging will become an increasingly significant driver of the Airport’s overall energy demand profile.

To manage this growth, the Airport must implement robust demand-side management strategies that actively control when and how power is used, particularly during peak demand periods. This includes evaluating demand response programs for EV charging and other flexible loads such as HVAC, and developing mechanisms to temporarily reduce or shift consumption to avoid peak charges and reduce infrastructure strain. The Airport will also look to engage industry vendors to identify and deploy technical solutions that support intelligent load management, ensuring electrification goals are achieved in a cost-effective and operationally resilient manner.

\$

B. FUNDING MECHANISMS

The Airport will leverage alternative financing mechanisms in order to further contain costs. In the past, the Airport has primarily funded energy-related projects either through planned capital improvement projects or through regular operations and maintenance replacement projects. These projects have included efforts such as HVAC upgrades, lighting retrofits, and generator installation.

More recently, for installation of PV technology, the Authority leveraged a third-party ownership mechanism called a power purchase agreement (PPA). Under the PPA, a third party is responsible for developing, constructing and maintaining the energy generation technology, allowing the Airport to simply purchase the electricity from the owner at an affordable rate without the capital costs of building the system themselves. The PPA allowed the Airport to obtain sufficient funding to plan and install PV technology without requiring a capital improvements expenditure which would impact the CIP. In order to realize full implementation of the STEP, the Airport will need to incorporate alternative funding sources as part of its broader capital procurement initiatives.

Recouping the full cost of EV charging and related electrification infrastructure is a key financial priority for the Airport, particularly as demand for EV and eGSE charging continues to grow. To address this, the Airport will seek to implement strategies to minimize Authority-

incurred costs and recover upstream investments, including evaluating alternative rate structures, parking premiums, and incentive- or disincentive-based charging models. These approaches will be paired with broader funding strategies that leverage external financing mechanisms such as Energy Savings Performance Contracts (ESPCs) for energy efficiency projects, as well as continued use of PPAs for future renewable energy development.

To contain costs, the Authority will evaluate external financing mechanisms, such as Energy Savings Performance Contracts (ESPCs), which fund energy conservation projects through long-term energy savings.

Additionally, the Airport will continue to actively monitor the evolving funding landscape to strategically combine grants, partnerships, and performance-based contracts to support cost-effective decarbonization and electrification investments.

C. IDENTIFICATION OF EFFECTIVE METRICS

Creating, tracking, and prioritizing the consistent use of key performance metrics will facilitate success of the Airport's energy management initiatives. These metrics will identify whether the Airport is successfully supporting its core functions and implementing the airport industry's best practices. To operationalize this, the Airport will develop a fast-track investment and procurement pathway that streamlines approval

and accelerates deployment of audit-identified energy projects with strong savings-to-investment ratios and short payback periods, ensuring high-impact opportunities are executed efficiently.

Additionally, the Airport will track cost savings and revenue generation from initiatives such as demand response programs and battery energy storage systems, with outcomes reported through the SAN Stewardship Report.

IMPLEMENTATION

Table 8: Cost Containment— Implementation Plan

Focus Area	Critical Activities		Responsibility	Time Horizon
A. Demand Side Management	A.1	Evaluate potential of demand response programs (particularly for HVAC and other non-critical loads such as electric vehicle charging); formulate recommendations for implementation at SAN, and engage with industry vendors to understand available technical solutions	FMD PNE	2 years
B. Funding Mechanisms	B.1	Identify and implement actions to minimize Authority-incurred costs of EV and GSE charging in order to recoup upstream infrastructure investments (e.g., alternative rate structures, incentives or disincentives to charging, parking premiums)	FMD PNE	2 years
	B.2	For efficiency projects lacking available internal funding, investigate feasibility of Energy Savings Performance Contracts (ESPC) to fund energy conservation projects through long-term energy savings; engage with energy service companies to understand feasibility of using an ESPC for identified projects	FMD	2 years
	B.3	Maximize use of SDG&E, local, state, and federal grants and incentives to reduce the capital cost of energy projects, including CUP electrification	PNE	Ongoing
	B.4	Consider Power Purchase Agreements (PPAs) for future solar projects	FMD	Ongoing
C. Identification of Effective Metrics	C.1	Develop a fast-track investment pathway and procurement process to streamline approval and accelerate deployment of audit-identified energy projects with strong savings-to-investment ratios and short payback periods	FMD ADC	1 year
	C.2	Track cost savings and/or revenue generation from demand response / BESS for disclosure in SAN Stewardship Report	FMD PNE	1 year
	C.3	Define the Authority's approach to considering triple bottom line (TBL) analysis to justify energy projects; identify past uses of the TBL and how it was implemented; develop evaluation criteria for project managers and design teams, helping to clarify decision-making around cost vs. environmental benefits	FMD ADC	2 years

Regional and Industry Leadership

5



REGIONAL AND INDUSTRY LEADERSHIP

The Airport is committed to leading the region and industry in sustainability through the deployment of a robust, innovative, and cost effective energy program which fully supports Airport operations.

Overview

SAN continues to demonstrate leadership in sustainability through third-party certifications, innovative infrastructure investments, and a forward-looking approach to energy and environmental performance. A key milestone is the Envision Gold Award from the Institute for Sustainable Infrastructure (ISI) for the Airside Improvements Project within the New T1 program. This recognition reflects the Airport's integration of sustainable design and construction practices, including reduced aircraft taxiing times and emissions, upgraded airfield systems, and a stormwater management approach that significantly limits runoff into San Diego Bay. Guided by the Envision framework, the project emphasizes resilience, resource efficiency, and coordination with stakeholders to minimize environmental impact.

Building on this foundation, the New T1 program has successfully implemented a comprehensive suite of sustainability measures across energy, water, transportation, and operational systems as part of its \$3.4 billion investment. New T1 incorporates high-efficiency mechanical systems, including heat recovery chillers, alongside meaningful reductions in embodied carbon achieved through optimized structural design and material selection. Advanced façade systems are in place to minimize heat gain and improve overall building performance. The program has also delivered significant progress in clean energy and transportation infrastructure, including the integration of on-site solar generation paired with battery storage, expanded EV charging capacity, and facilities that support the ongoing transition to electric ground transportation such as shuttle fleets, taxis, and ground support equipment. These efforts have positioned the Airport to successfully pursue LEED Gold certification for the terminal and ParksMart Gold certification for the parking plaza, reinforcing its commitment to delivering high-performance, sustainable infrastructure.



As SAN moves beyond the New T1 program, it recognizes this investment as a platform for continued leadership in energy strategy and sustainability. The Airport remains committed to evolving its approach—leveraging lessons learned, advancing emerging technologies, and strengthening its role as a regional and industry leader in sustainable aviation infrastructure.

Critical Areas of Focus



A. Third Party Frameworks



D. Business Intelligence



B. Sharing Best Practices to Build Industry and Regional Momentum



E. Periodic Strategic Energy Plan Validation



C. Engagement with Business Partners in Energy and Sustainability Goals



F. New and Emerging Technologies



A. THIRD PARTY FRAMEWORKS

The Airport has sought to obtain third-party certification wherever possible to validate the credibility of its sustainability practices, and will continue to do so. In addition to the ACA certification described previously, the Airport has pursued and will continue to consider other certifications such as LEED, ParksMart, and Envision. The Airport's longstanding commitment to LEED is well documented, including a pledge to achieve LEED Silver or better on all new facilities. As part of this effort, the Airport has consistently aimed to exceed code-required energy performance in pursuit of all future LEED certifications.

SAN will leverage International Organization for Standardization (ISO) 50001 as a guiding framework to strengthen its energy management approach, adapting global best management practices to align with the Airport's unique operational profile and constraints. Rather than pursuing certification as a

primary objective, SAN will evaluate the applicability of ISO 50001 principles and selectively integrate them into a tailored, airport-specific energy management framework and protocol. This approach enables the Airport to institutionalize continuous improvement, data-driven decision-making, and operational accountability while maintaining flexibility to address the complexities of airport systems, tenant interfaces, and evolving energy demands.





B. SHARING BEST PRACTICES TO BUILD INDUSTRY AND REGIONAL MOMENTUM

The Airport continues to demonstrate industry leadership in energy through targeted investments in innovative infrastructure and operational electrification. A standout example is its pioneering procurement of three AmpCarts in 2026. These mobile charging units are designed to provide enhanced operational flexibility for charging eGSE at various locations across the airfield. By deploying this solution where traditional electrical infrastructure could not accommodate fixed charging, the Airport has established a replicable model for overcoming a key barrier to airside electrification. This effort not only reflects a creative and practical approach to decarbonizing operations but also positions the Airport as an early leader in advancing and validating emerging technologies, including achieving Underwriter Laboratories (UL) certification for this application, and therefore paving the way for industry-wide adoption.

Complementing these efforts, the Airport's campus configuration is well-suited for future microgrid implementation, creating a valuable test bed for energy conservation strategies, on-site renewable generation, and advanced energy management optimization. The Airport remains committed to sharing these insights and best practices with the broader aviation industry and regional partners, through conferences, technical resources, and public engagement, to accelerate progress in sustainable airport operations and support a more resilient energy future.

As a major consumer of electricity in the San Diego region, the Airport has both a responsibility and an opportunity to influence the region's vision for its collective energy future, participating in a number of regional initiatives, including:

- CleanTECH San Diego
- Airports Council International-North America (ACI-NA) Sustainability Working Group
- CA Airport Council Environmental Working Group
- San Diego Regional Climate Collaborative
- San Diego Regional Clean Cities Coalition

The Authority is one of the largest single energy consumers in San Diego County and plays a key role in meeting local energy goals. The Airport's timeline of decarbonization parallels the City of San Diego, whose ambitious goals include reaching Net Zero Energy by 2035. In addition to the City, the San Diego Unified Port District has also set ambitious energy consumption and generation goals. These sister agencies will work alongside one another to ensure their energy goals are aligned and that public outreach messages are consistent and complementary. These agencies have a powerful capability to work together in producing and communicating a unified regional energy goal and encouraging the whole region to join in their sustainability efforts.



C. ENGAGEMENT WITH BUSINESS PARTNERS IN ENERGY AND SUSTAINABILITY GOALS

A key component of this leadership will be to evolve the SAN Green Concessions Program, to leverage the Airport's campus-wide sub-metering capabilities to generate actionable, tenant-level energy insights. By using this data as a targeted engagement tool, the Airport will be able to work collaboratively with concessionaires to drive operational efficiency, reduce energy consumption, and align tenant performance

with broader sustainability goals. Once implemented, this data-driven approach will strengthen on-site energy management while also creating a scalable model for tenant engagement that can be shared with the broader aviation industry through conferences, technical forums, and peer collaboration, reinforcing the Airport's role in shaping best practices.



D. BUSINESS INTELLIGENCE

The Business Intelligence (BI) function at SAN has evolved over time into a core capability embedded within the Airport's finance and technology structure, supporting data-driven decision-making across operations. The BI team has matured alongside the Airport's growing emphasis on analytics, performance tracking, and system integration. Its mission can be understood as transforming complex operational data into actionable insights that improve efficiency, optimize resource use, and support strategic planning, making it highly relevant to the Airport's energy management and sustainability objectives.

In the context of energy, the Authority has a clear opportunity to further engage the BI team to unlock deeper insights into consumption patterns, peak demand drivers, and opportunities for demand reduction. By integrating BI capabilities with existing submonitoring infrastructure, particularly systems managed through SkySpark, FMD can enhance its ability to monitor, analyze, and act on real-time and historical energy data. This collaboration would enable more proactive energy management, support targeted efficiency measures at the tenant and system level, and strengthen the Airport's overall data-driven approach to reducing energy use and costs.



E. PERIODIC STRATEGIC ENERGY PLAN VALIDATION



The Authority is committed to periodically updating the STEP every five years, to ensure that the stated goals remain valid and that energy performance is trending in the right direction. Re-validation will also allow the Authority to evaluate emerging technologies and ensure that the current roadmap does not prevent the Airport from using the latest and best technology. The Airport's ongoing stakeholder engagement will be also enhanced through the periodic updates and review of the STEP.

F. NEW AND EMERGING TECHNOLOGIES

With the continued innovations in the energy generation, storage, controls, and electrification, it is essential that the Airport actively monitor new and emerging energy technologies to determine their applicability and cost effectiveness for implementation within the Airport. To support this, the Authority will continue to leverage its relationships with local academic institutions and industry organizations, while pursuing pilot opportunities to test and validate new solutions in a real-world airport environment.

Technologies that will be monitored may include renewable energy generation solutions such as micro-wind systems, seawater air conditioning, and fuel cells; energy storage options like battery storage and power-to-gas systems; advanced controls including machine learning-enabled optimization and AI-driven energy management applications; and HVAC innovations such as high-efficiency air-source heat pumps.



IMPLEMENTATION

Table 9: Regional and Industry Leadership—Implementation Plan

Focus Area	Critical Activities		Responsibility	Time Horizon
A. Third Party Frameworks	A.1	Evaluate ISO 50001 and its applicability to energy management at SAN; develop an Airport specific energy management framework and protocol informed by the ISO standard (certification not necessarily required)	FMD PNE	3-5 years
B. Sharing Best Practices to Build Industry and Regional Momentum	B.1	Actively engage in local and regional energy initiatives	FMD PNE	Ongoing
	B.2	Share lessons learned and energy innovations at regional and industry conferences	FMD PNE	Ongoing
	B.3	Create a common vision within the region through collaboration with sister agencies	PNE	Ongoing
C. Engagement with Business Partners in Energy and Sustainability Goals	C.1	Evolve SAN Green Concessions Program to leverage Airport campus sub-metering capabilities; leverage resulting data as engagement tool with concessionaires; share approach/outcomes with industry at conferences, etc.	PNE	2 years
	C.2	Partner with concession tenants to advance electrification through ongoing outreach, technical guidance, and implementation support, enabling the elimination of natural gas use in future concession buildouts and renovations	PNE	5 years
D. Business Intelligence	D.1	Leverage Airport Authority's Business Intelligence team to uncover and unlock energy opportunities	FMD PNE BI	2 years
E. Periodic STEP Validation	E.1	Update the STEP every 5 years	FMD PNE	5 years
F. New and Emerging Technologies	F.1	Leverage relationships with local academic institutions and industry bodies to monitor new and emerging technologies	PNE FMD ATOps	Ongoing
	F.2	Investigate opportunities to pilot new technologies at the airport	PNE FMD ATOps	Ongoing

Leading the Future of Sustainable Aviation Infrastructure

The STEP establishes a clear and actionable framework for the Airport to strengthen energy performance, improve operational resilience, and advance toward long-term decarbonization. As airports become increasingly dependent on electrified systems and digital infrastructure, building a more resilient energy network is essential to maintaining safe, reliable, and continuous operations during grid disruptions, extreme weather events, and future energy uncertainties. Through strategic investments in conservation, electrification, renewable energy, energy storage, and intelligent energy management systems, the Airport is positioning itself to reduce reliance on fossil fuels while enhancing energy security and controlling long-term operating costs. Signature projects such as New T1 and the Airside Improvements Project demonstrate that sustainability, resilience, and operational performance can be successfully integrated into large-scale capital development and day-to-day operations.

Ultimately, the STEP represents more than an energy strategy—it is a long-term commitment to transforming the Airport into a more resilient, efficient, and low-carbon aviation hub. By steadily advancing initiatives across conservation and efficiency, cost containment, and energy resilience the Airport is establishing a practical pathway toward decarbonization while preparing its infrastructure to meet future operational and environmental challenges. Continued collaboration, innovation, and data-driven decision-making will be critical to achieving these goals and reinforcing the Airport’s role as an industry leader in sustainable and resilient aviation infrastructure.



