CARBON NEUTRALITY PLAN

A ROADMAP FOR AIRPORT CARBON ACCREDITATION AND BEYOND

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SAN DIEGO
INTERNATIONAL AIRPORT
LET'S GO.

July 2020

The Carbon Neutrality Plan establishes the Authority's vision to be a leader in California, the San Diego region, and aviation industry in its response to global climate change

CARBON NEUTRALITY PLAN

A ROADMAP FOR AIRPORT CARBON ACCREDITATION AND BEYOND

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Disclaimer

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Executive Summary

As the air transportation industry strives to meet the increasing demands of passenger travel, cargo, and other air traffic activity, airports are balancing growth and operational demands while addressing the evolving aspects of sustainability today. As critical infrastructure that is part of a vital transportation network, and local economic health, airports are adapting to energy, water, and climate change constraints, implementing comprehensive resource efficiency programs, aligning capital programs with green building best practices, working with tenants to improve sustainability practices, and working with airlines to address air quality and reduce greenhouse gas (GHG) emissions.

> Mission: The Authority is committed to operating San Diego's air transportation gateways in a manner that promotes the region's prosperity and protects its quality of life.

The San Diego County Regional Airport Authority (Authority) strives to actively managing GHG emissions and air pollutants as part of its planning and operations, and its commitment to make San Diego International Airport (SAN or the Airport) a leader in sustainability.

This commitment makes the development and implementation of an effective GHG emissions reduction strategy a key element of the Authority's broader environmental sustainability management program. The Authority's approach for carbon management and emissions reduction is summarized in this Carbon Neutrality Plan (CNP or Plan), and sets a course for the Airport to achieve carbon neutrality, under the Airports Council International (ACI) Airport Carbon Accreditation (ACA) program.

The CNP, as other sustainability-focused plans, has been developed through a grant provided by the Federal Aviation Administration (FAA), under their Airport Improvement Program[1].

Moving Air Emissions Management Beyond Compliance

The CNP serves as the Authority's strategy and plan for managing air quality from a holistic perspective, addressing virtually every source and form of air emission that the Authority has control over, and even where the Authority merely has only influence. This Plan has a particular focus on GHG emissions and is produced with the understanding that air quality and climate change are distinct topics, and local GHG reduction actions provide an air pollutant reduction co-benefit. Every proactive initiative that the Authority enacts to reduce GHG emissions, helps advance the global cause of addressing climate change, and makes collective action more cost effective through technological advancements, cultural change, and economies of scale.

A Plan to Advance Air Emissions and Carbon Management at the Airport and Beyond

The Plan provides an organized framework to track the Authority's leadership in local air pollution reductions and commitment to climate change mitigation through GHG reductions. The Authority sees holistic air emissions and carbon management addressing five primary focus areas: Airlines and Aircraft, Carbon Leadership, Energy, Waste, Water and Other Emissions, and Transportation. The Authority's strategies for addressing clean transportation, water usage, waste, and energy consumption, can be found in dedicated plans, which are distinct but complementary to this Plan.
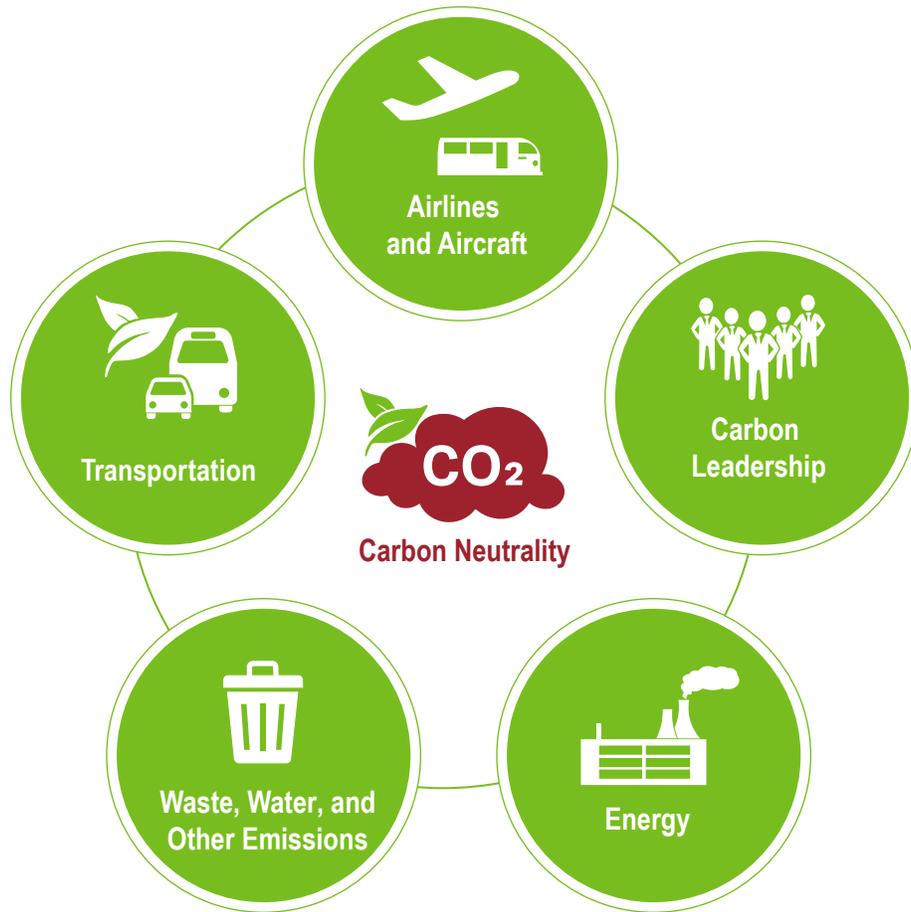
The Authority has varying levels of control and influence over each of these focus areas. For some areas, like energy consumption, it exerts significant direct control; others, like airlines and aircraft, are generally outside Authority control or influence. Through the development of this Plan and engagement with key stakeholders, the Authority has established five aspirational goals with targets, which serve as the basis and motivation for the remaining activities documented in this Plan.

Aspirational Goals	Metric	Target(s)	Target Timeframe
1. **Authority – Climate Change** Minimize the Authority's direct operational impact on climate change	Operationally controlled GHG emissions including Scope 1, 2 and Airport staff business travel	80% below 2015 levels	by 2035
2. **Authority – Air Quality** Minimize the Authority's direct operational impact on local air quality	Conversion of stationary combustion equipment to electric or alternative energy sources	100% of Airport-operated units	by 2035
3. **Airport-Wide Emissions** Help airport partners minimize their impact on climate change	GHG intensity, measured by Scope 1, 2, & 3 emissions per passenger	30% below 2015 levels	by 2035
4. **Climate Leadership** Provide regional and industry leadership and collaboration in climate change solutions	ACA Certification	ACA Level 3+ Carbon Neutrality	by 2022*
5. **Airport Plan Integration** Achieve GHG reductions from goals of other plans	GHG-reducing metrics from plans including STEP, WSP, CTP and ZWP	GHG-related targets from STEP, WSP, CTP, and ZWP	as set in various plans

CTP - Clean Transportation Plan
STEP - Strategic Energy Plan
WSP - Water Stewardship Plan
ZWP - Zero Waste Plan

* Goal achieved ahead of schedule in September 2019.

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As a prominent leader in the aviation industry as well as the San Diego region, the San Diego County Regional Airport Authority (Authority) has a major stake in sustainability and an opportunity to contribute towards climate change progress.

With global climate change, California will directly experience social, economic, and environmental impacts, but is uniquely positioned to provide valuable leadership in developing innovative and meaningful strategies to mitigate those impacts. California's comprehensive, economy-wide greenhouse gas (GHG) mitigation program is an international model for effective climate change action and the San Diego region has further embraced this program and broader goals through city and county planning.

The aviation industry has also been taking key steps to advance its sustainability. As a result of industry-wide technology, operational and manufacturing improvements, aircraft are now 20 percent more fuel efficient than a decade ago. Airports as well as airlines continue to progress in making the challenging transition away from fossil fuels, while maintaining safe and reliable operations. And while airports and airlines are inextricably linked, they also have distinct operations contributing to the emissions associated with air travel. Airports control a minimal part of emission-generating activities (e.g., energy for building operations, owned fleet vehicles) while third parties such as airlines, passengers, suppliers and tenants are responsible for the majority of emissions generated at the airport.

> The Carbon Neutrality Plan establishes the Authority's vision to be a leader in California, the San Diego region, and aviation industry in its response to global climate change.

With San Diego International Airport (SAN or the Airport), airlines and other third parties represent approximately 94 percent of the Airport's GHG emissions inventory (Figure 1). While the Authority has no direct control over these emission sources, this dynamic between the Airport and business partners and passengers highlights the fact that engagement with third parties is critical to significantly reducing air travel-related GHG emissions.

Figure 1: Breakdown of SAN's GHG emissions showing what the Authority controls and what not

68% Aircraft (Landing and Takeoff, Taxiing, Other Airline Services)

26% Tenants, Passengers, Authority Employees, Contractors, etc.

6% Authority Direct Control (Energy, Fleet)

Vision for Air Emissions and Carbon Management

The Authority is committed to working not only to manage and aggressively reduce the emissions under direct control, but to actively engage contractors, airlines, suppliers, tenants, and passengers in promoting and advancing more comprehensive air emissions and carbon management.

The Carbon Neutrality Plan (CNP or Plan) is one of the programmatic sustainability elements of the Authority's broader environmental sustainability management program for the Airport. This Plan updates and expands on the Authority's longstanding program to reduce the Airport's air emissions, and provides a framework for the Authority's ongoing air emissions management, prioritization, and monitoring. As initiatives are implemented, results are monitored, and emissions reductions achieved, the Authority will continue to adapt and advance this Plan to achieve the most impactful and sustainable results. The enactment of this plan and the Authority's broader emission reduction program can generate significant values and benefits to the local community, traveling public, and the broader aviation industry, in addition to benefitting the Airport.

Table 1: Benefits from the Implementation of a Carbon Reduction Program

Contributing Positively to California	• Supporting state-wide GHG reduction initiatives • Improving local and regional air quality
Advancing the Aviation Industry	• Participating in Airport Carbon Accreditation (ACA)[2] • Developing and improving industry best practices
Optimizing Airport Operations	• Maximizing the efficient use of Airport's limited site • Helping reduce tenant and passenger GHG emissions
Mitigating Global Climate Change	• Aligning GHG action with global accords and the aviation industry • Advancing commitments to carbon neutrality
Providing Global Leadership	• Supporting the Authority's broader commitment toward regional prosperity and quality of life • Exemplifying leadership on carbon in industry, region, State

The Authority's vision is reflected in the goals and supporting targets developed in this CNP, which align with the most progressive goals and commitments to advance climate change action within the aviation industry and beyond, including the commitment of the International Civil Aviation Organization (ICAO) and the United Nations Sustainable Development Goals (SDGs) for carbon neutral growth starting in 2020. To convert the Authority's vision and goals into actionable initiatives, the CNP is broken down into the following focus areas (Figure 2):

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Figure 2: CNP Focus Areas
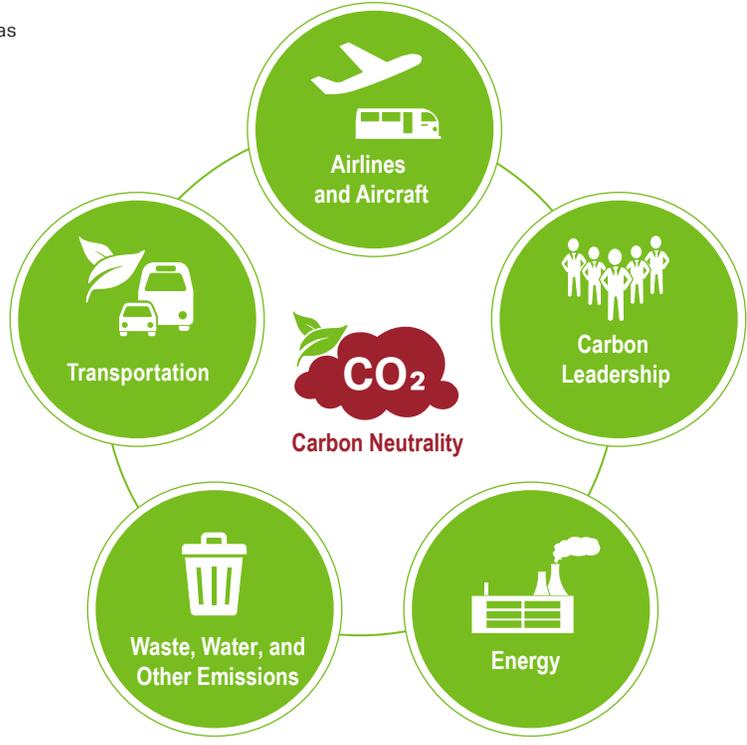
Air emissions and carbon management at the Airport are centered on five primary focus areas:

- Airlines and Aircraft - aircraft emissions, airside transport, and ground support equipment (GSE)
- Transportation - ground transportation, commuters and passenger travel, Airport-owned vehicles, and business travel
- Energy - electricity and stationary combustion
- Waste, water, and other emissions - waste, water, refrigerants, and de-icing
- Carbon Leadership - advancing carbon initiatives in the region and industry

The Plan is a companion to other plans that improve the Airport's sustainability within the focus areas listed above, and integrates the initiatives from those plans that help to reduce GHG emissions. The Plan also includes its own goals, targets, and supporting initiatives to comprehensively address the Authority's GHG emissions profile. Specifically, the Plan:

- Recognizes the importance of stakeholder engagement;
- Summarizes the sustainability baseline for GHG and air pollutant emissions;
- Establishes aspirational goals and performance targets for emissions reduction and sustainable practices;
- Provides a comprehensive list of vetted emissions reduction and performance actions;
- Details an implementation and monitoring program; and
- Identifies funding sources and a strategy to procure those sources

Carbon Leadership

The Authority is focused on all achievable actions to reduce GHG emissions and maintain leadership in climate change mitigation. As the CNP indicates, the Authority has and will continue to prioritize initiatives and GHG reduction actions by considering:

- Source categories with the greatest potential for emissions;
- Level of control over each emissions source; and
- Leadership in developing new GHG reduction approaches.

Table 2 shows the largest GHG emission sources at the Airport and the level of control and influence the Authority has over these sources. The initiatives included in this Plan and related plans that address these emission sources are also summarized. Irrespective of the limited control/influence, the Authority's initiatives are helping to advance the global push toward climate change mitigation, regardless of the percent impact on the Airport's emissions.

Table 2: Top 5 GHG Airport Source Categories (Baseline Year 2015)

Airport Source Category	2015 MT CO_2e	% of Airport Total	Authority Level of Control	Related CNP Initiatives and Associated Airport Plans
Aircraft	202,532	67%	Influential*	AQ-9, AQ-10, AQ-12, AQ-13, AQ-14, AQ-16, AQ-20, and AQ-23
Public access vehicles - cars, taxis, rideshare companies, transit	40,284	13%	Influential	AQ-8, AQ-23, and CTP
Tenant staff and visitor vehicles	22,288	7%	Influential	AQ-8 and CTP
Electricity use	14,418	5%	Direct	AQ-1, AQ-3, AQ-4, and STEP
Waste	9,411	3%	Influential	AQ-6 and ZWP

Note: This table only reports data for the top five emission sources, not for all the sources included in the GHG inventory. For this reason, the sum does not add to 100 percent.

*Per federal law, the Authority has very little influence over aircraft engines and supporting functions. In addition, Pilots in Command (PIC) have final decision-making authority over aircraft operations.

An example of the Authority's leadership in carbon management and climate change is its commitment to ACA. ACA has four levels of increasingly stringent requirements that airports must demonstrate, from Level 1 GHG inventory development to Level 3+ carbon neutrality. The Authority entered the ACA program at Level 1 in 2015, advanced to Level 2 in 2016 and in 2018 advanced to Level 3. The Authority achieved Level 3+ Neutrality in 2019. More details on the ACA program can be found in the dedicated spotlight in the Goals and Targets section as well as Appendices A and D.

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Integration with Authority's Sustainability Program

The Authority's approach for sustainability is far-reaching, touching virtually every aspect of Airport operations and development. This approach is embodied in the Authority's definition of sustainability for the Airport, formalized in the Board-approved Sustainability Policy, and is communicated regularly through the Airport's ongoing sustainability reporting efforts (e.g., Annual Sustainability Report).

The structure of the CNP was influenced by, and developed in coordination with, several other existing plans, policies, programs, and initiatives, as summarized in the following sections.

> The Authority is committed to building an enduring and resilient enterprise by effectively managing our financial, social, and environmental risks, obligations, and opportunities.

Sustainability Plans

The Authority has established seven programmatic sustainability elements that are part of the Airport's environmental sustainability management program:

- Air Emissions
- Clean Transportation
- Climate Resilience
- Zero Waste
- Biodiversity
- Sustainable Energy
- Water Stewardship

Each programmatic element has a dedicated strategic action plan that formalizes aspirational goals, initiatives, and an implementation plan for that area. The compendium of plans together serves as the Authority's approach for managing environmental sustainability at the Airport.

As this Plan addresses air emissions and carbon management, it includes a comprehensive strategy around GHG emissions, which are a key aspect for many of the other sustainability program elements. Table 3 summarizes how GHG emissions relate to each of the sustainability program elements and associated action plans.

Table 3: Air Emissions Relationship to Environmental Sustainability Management Program Elements

Plan	GHG Relevance	Other Key Aspects	Completion Year
Strategic Energy Plan (STEP)	Primary	Electricity and fuel	2018
Clean Transportation Plan (CTP)	Primary	Fuel and accessibility	2020
Zero Waste Plan (ZWP)	Secondary	Waste recycling, reduction, reuse	2020
Water Stewardship Plan (WSP)	Secondary	Water conservation and quality, flood resilience	2016
Climate Resilience Plan (CRP)	Correlated	Adaptive infrastructure, risk management and monitoring	2020
Biodiversity Plan (BDP)	Correlated	Protect and restore habitat and biological systems	2020

Air Emissions / Carbon Management Plans and Programs

Air emissions represent a key topic for the Airport, and several plans and programs have supported the foundations of carbon neutrality over the years. The two more relevant documents are the 2009 Air Quality Management Plan and 2008 Memorandum of Understanding (MOU) with the State of California Attorney General. Each of these documents established actions taken over the years to reduce overall emissions and address air impacts and GHG emissions in a measurable way. These documents were a key source of information for the CNP. Other important documents that the CNP draws on are past emissions inventories, ACA reports, and existing programs such as those dedicated to energy, transportation, and waste emissions reduction. A framework for how the CNP influences, and is influenced by, Airport policy, plans, and ongoing projects and operations is depicted in Figure 3.

Figure 3: CNP Integration with Existing Sustainability Policies and Programs

– Economic prosperity
– Environmental sustainability
– Social responsibility

Sustainability Policy

Organizational Strategies

– Employee commitment
– Enhanced financials
– Trusted and responsive agency
– Customer satisfaction
– Safe and efficient operations

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– Clean Transportation Plan
– Air Quality Management Plan
– MOU with Attorney General
– Annual GHG Inventories
– Design & Construction Guidelines
– Strategic Energy Plan
– Business Continuity Plan
– Airport Emergency Plan

Existing Plans and Studies

Airport Development Plan (ADP) & Capital Improvement Projects (CIP)

– Future Airport Layout Plan
– Terminal 1 Replacement
– 5 & 20-year CIP Program
– Airport Support Facilities

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Airport Planning Documents

The Authority is planning for the future and shaping what the airport will look like in the next decades through the Airport Development Plan (ADP), currently being finalized, and the 5-year rolling Capital Improvement Plan (CIP). While the ADP recommends improvements that will allow the Airport to meet demand through 2035, the CIP identifies specific upcoming projects that are planned for construction, several of which could strongly influence the Airport's emissions profile. Further information about the ADP can be found in the dedicated inset.

Regional Plans and Policies

The CNP and associated goals and initiatives may also be influenced by a host of other regional plans, policies, and programs. A listing of these is provided below:

- The City of San Diego 2016 Climate Action Plan
- The County of San Diego 2018 Climate Action Plan
- The County of San Diego Air Pollution Control District (APCD) AB 617 Plans and Programs
- San Diego Gas & Electric's Proposal to Meet 100% Renewable Goal
- San Diego Association of Governments (SANDAG) 2050 Regional Transportation Plan
- SANDAG's SB 375 regional GHG Reduction Targets and Sustainable Communities Strategy, supported by the 2050 Regional Transportation Plan[3]
- Port of San Diego Climate Action Plan
- California Climate Change Scoping Plan

New Taxiway A

Dual Level Roadway and Curbfront

Parking

Transit Ready Area

GROUND TRANSPORTATION   **TERMINAL**   **AIRFIELD**   **TRANSIT**
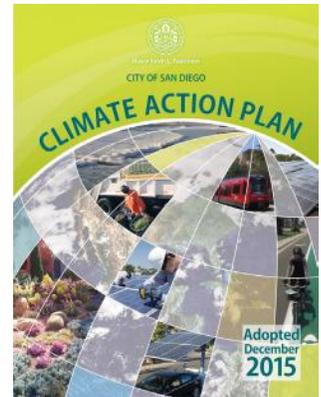
Our ADP – Driving sustainability planning through 2035 and beyond

In 2017, the Airport served over 22 million passengers, up from the 20 million it served just the year before. This translates to an average of 550 flights per day, making SAN a top or "Core" 30 airport in the US, thus playing an important role in the national aviation system. ADP represents the Airport's master planning effort to determine the facilities needed to meet the region's air travel demand through the year 2035. The ADP's overarching goal is to optimize the Airport's 661-acre site to accommodate this growing demand, while maintaining high levels of passenger satisfaction.

The centerpiece of the ADP is the replacement of the Airport's 50-year-old Terminal 1 with a more efficient and comfortable facility. The new Terminal 1 will increase from 19 gates to as many as 30 gates and will include more gate-area seating, restaurants, and shops, as well as expanded security check point lanes. Similar to the curbfront of the Airport's Terminal 2, the new Terminal 1 will also separate arriving and departing passenger traffic with an elevated departures roadway that will include curbside check-in.

Terminal 1 Replacement

Airfield Apron &
Taxiway A/B Upgrades

New Airport Entry Roadway
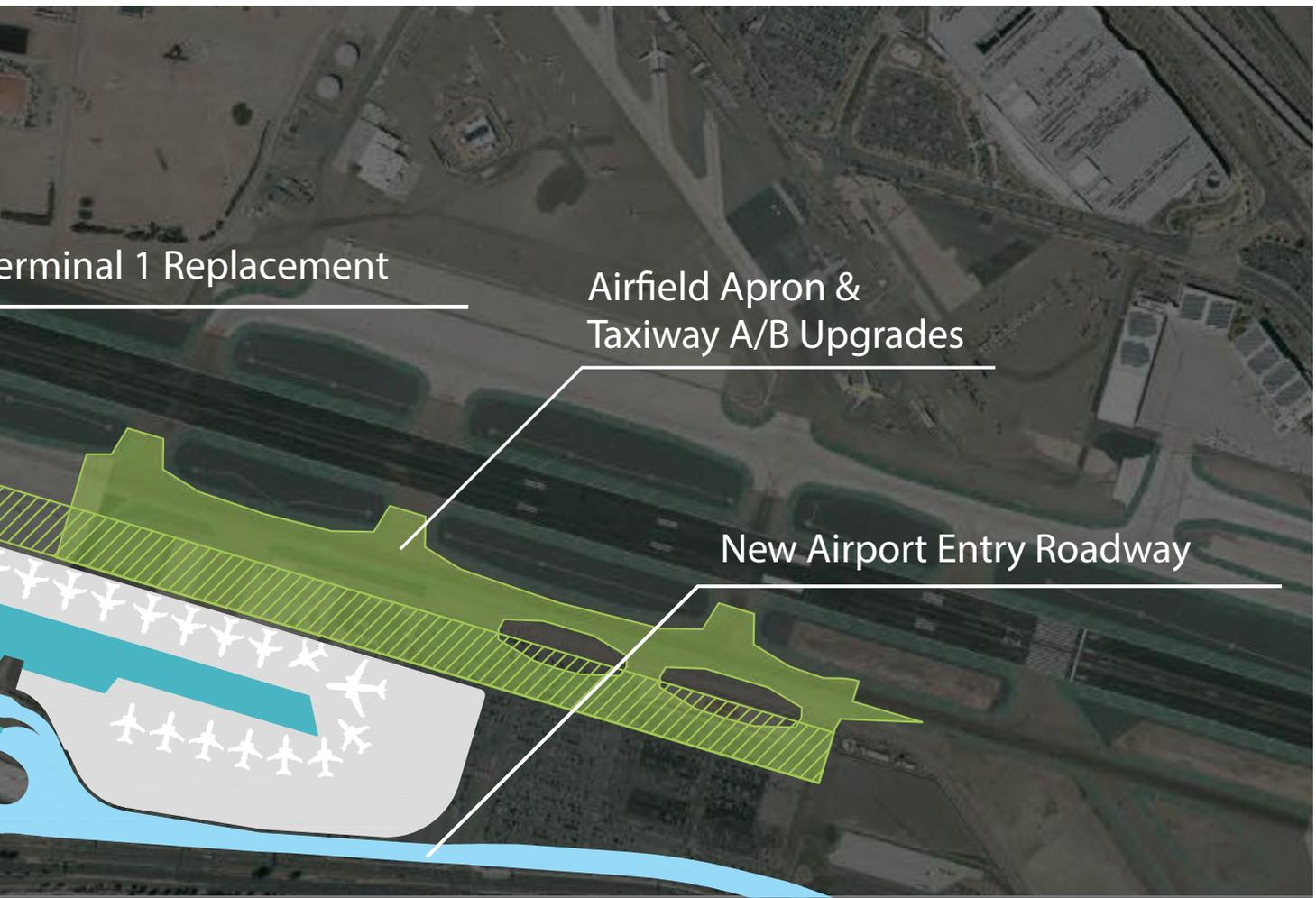
A new on-airport entry roadway will provide a dedicated Airport access point from west-bound Laurel Street and North Harbor Drive, for vehicles coming to the Airport from the east, and will also include a multi-use path for pedestrians and bicyclists. This will help reduce traffic on North Harbor Drive. In addition, all buses currently moving to and from the Rental Car Center will be removed from Harbor Drive and routed exclusively through the new on-airport entry and link road. On the airside, Taxiway B will be realigned to meet FAA standards and a new Taxiway A will allow bidirectional flow of aircraft. Future phases could include an expansion of Terminal 2 West (the Stinger). Areas have also been preserved for a transit station to directly serve the terminals and for on-airport exit lanes that can be integrated into future regional transportation network improvements, which are now being

evaluated as part of SANDAG's new Regional Transportation Plan. Please note that the Authority, at this time, has not approved or committed to undertake any of the project elements included in the ADP. Any formal approval of the ADP is dependent on completion of appropriate state and federal environmental review.

The CNP is a part of the Authority's broader sustainability management planning framework, helping to establish long-term environmental stewardship goals for the Airport. As such, the CNP will help inform the further design and implementation of the ADP, as well as guide the Airport's daily operations in the future.

Stakeholder Engagement

As the Authority relies on tenants, airlines, cargo, ground transportation firms, and others to implement its business model, it also relies on engagement with these same entities to collectively reduce GHG emissions for the Airport and more broadly in the aviation sector. Underpinning all of this is the Authority's mission and commitments with the community and passengers that use the Airport.

Stakeholder engagement is central to air pollutant and GHG management planning; the Authority can implement actions to reduce emissions in areas where it has more direct control, but must engage business interests and other third parties in areas where it can only influence emissions reductions. As noted previously, the Authority has various levels of influence over these key stakeholders and their respective emissions. Considering key internal and external stakeholders is essential for ensuring a holistic approach to stakeholder engagement and optimizing buy-in, accountability, and support of emission reduction strategies. Further, the Authority will prioritize voluntary programs, when possible, to help facilitate and maintain Airport stakeholders' access to federal and state grant funding for implementation of emission reduction strategies.

Internal Stakeholders

Workshops were held with internal stakeholders at key milestones during development of the Plan, to ensure accurate information and alignment with Airport operations, and to identify the best and most feasible goals and initiatives. Staff from the following departments participated in these workshops and provided supporting background information for plan development (Figure 4):

Figure 4: Authority Departments that Participated in the Development of the Plan

Planning & Environmental Affairs Department

Airside & Terminal Operations Department

Facilities Management Department

Aviation Security & Public Safety Department

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Ground Transportation Department

Airport Design & Construction Department

Procurement Department

Revenue Generation & Partnership Development Department

P&E A&T ASP ADC RGP PRO GT FMD

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External Stakeholders

To improve local air quality and drive reductions in GHG emissions, it is crucial the Authority engage with the community, traveling public, regional planning partners, and Airport business partners and service companies including concessions, airlines, ground handlers, cargo, and ground transportation firms. As such, the Authority is committed to continued and expanded collaboration to achieve GHG emission reductions with the following external stakeholders (Figure 5):

- Individual airlines and ground handlers to collaborate on GHG emissions reductions.
- Fleet managers, ground transportation providers, tenants, and other organizations, contributing to the Airport's indirect GHG emissions to work together on the development and implementation of GHG emissions reduction strategies.
- Aviation industry, including other airports and industry organizations, to collaborate on funding for research and development, and creative ways to reduce GHG emissions generated by Airport operations.
- Regional planning partners to strategize on ways to further initiatives such as increasing public transportation ridership to and from the Airport.
- Other public/external organizations, where engagement is appropriate, to drive down GHG emissions associated with the Airport's operations.
- Inclusion of the Airport's operations inventory in the California State Implementation Plan to support the County of San Diego's 8-hour ozone attainment plan.

The Authority has also developed a dedicated Stakeholder Engagement Plan to complement this Plan and the Authority's GHG reduction activities moving forward. It includes the Authority's approach and documentation of engagement with owners and operators of third-party emission sources included in the Authority's GHG inventory, as well as other efforts the Authority is implementing to share best practices within the community, business partners, and aviation industry. The Stakeholder Engagement Plan included in Appendix A is managed by the Authority as a separate stand-alone document to allow for flexibility, in accommodating changing stakeholder engagement activities, and to document stakeholder engagement efforts for reporting purposes.

Figure 5: Main External Stakeholder Groups for the Authority's Carbon Management Program
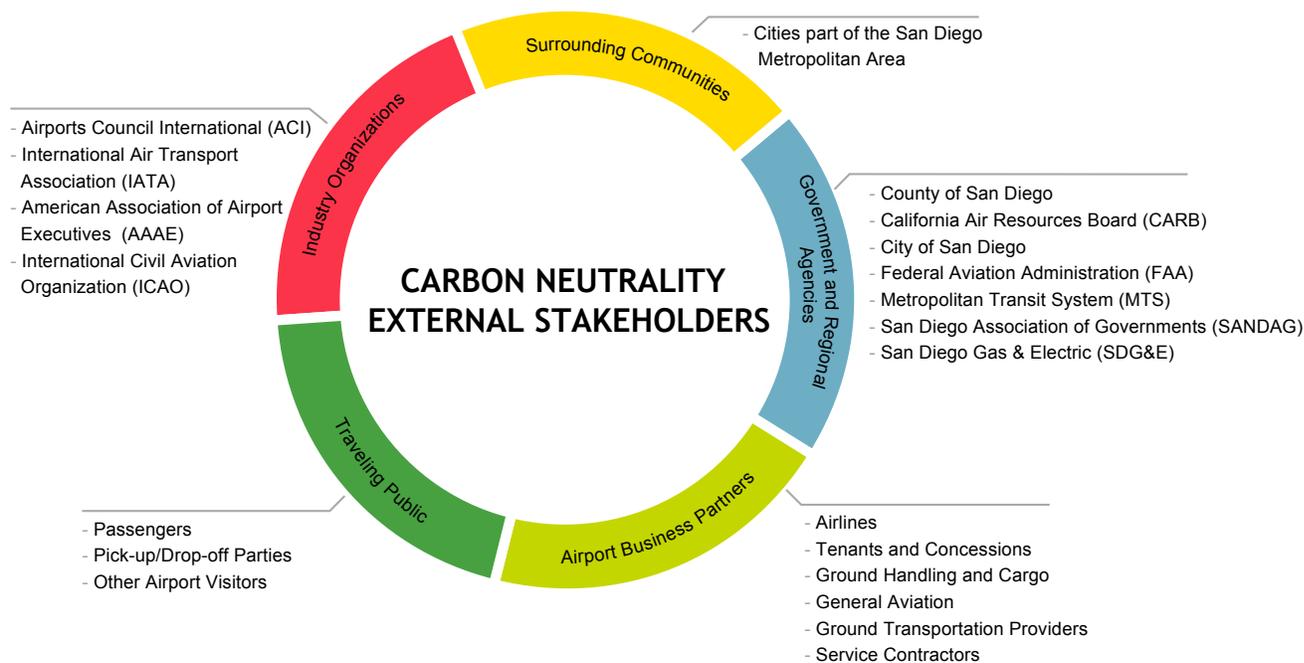
Baseline Assessment & Annual Inventories

The Authority has completed a baseline assessment to establish the Airports carbon footprint and the conditions from which to reduce emissions.

To develop this foundation for the Airport's existing GHG emission conditions and the basis for monitoring emission reductions, the Authority conducted an inventory of the Airport's 2014 and 2015 air pollutant and GHG emissions. While the Authority has completed earlier GHG inventory efforts, the 2015 emissions inventory will serve as the baseline for this Plan and monitoring moving forward.

Although this Plan addresses all air emissions from Airport operations, the forecast and reduction targets are focused primarily on GHG emissions, with the understanding that many of the GHG reduction actions will have co-benefits of reducing criteria pollutants such as nitrogen oxides (NOx) and particulate matter (PM). The baseline assessment includes all air emissions inventoried for the baseline year of 2015.

Greenhouse Gases

Achievement of the 2015 Conditions

While 2015 is the GHG baseline year for this Plan, the Authority has enacted many progressive GHG-reducing initiatives prior to 2015. Many of these pre-2015 reductions were achieved through initiatives created under a 2008 MOU that the Authority proactively entered into with the California Attorney General[4] specifically to reduce GHG emissions. The following is a summary of the previous related initiatives, and the status of each:

1. Provide power and preconditioned air (PCA) at all gates.

   - All gates (except one that is planned to be added) provide PCA units for aircraft use.
   - All gates provide 400 Hertz (Hz) ground power for aircraft use.
   - The Authority is requiring ground power and PCAs for any new projects, if applicable (e.g., ADP and Northside Cargo Facility).

2. Replace GSE with electric or alternative fuel vehicles.

   - The Airport currently has 71 airside charging ports supporting 174 electric GSE (25 percent of total GSE fleet up from approximately 13 percent in 2010).

3. Replace shuttles with electric or alternative fuel vehicles.

   - 100 percent of Authority-controlled shuttles use alternative fuels.

4. Achieve LEED Certification (Silver) for all new development and renovation.

   - All major construction projects have achieved at least LEED Gold or equivalent.

5. Use green construction methods and equipment.

   - Standard contract language includes a provision for the utilization of low- and zero-emitting equipment during construction activities, whenever possible.

6. Engage tenants in recycling and emissions reduction efforts.

   - The Authority has a robust waste diversion program, including a Food Recovery Program, which was recognized with a 2017 Outstanding Achievement Award from the City of San Diego.
   - The Authority launched a "Green Concessions" program in 2017 to educate and recognize tenants' adoption of sustainable business practices (including recycling).

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As most of these measures have been accomplished, the Authority's 2015 baseline GHG emissions conditions were created after achieving significant GHG reductions, from which the Authority will further reduce. The following is a summary of the baseline emissions.

2015 GHG Emissions Inventory Summary

Effective GHG management depends on both a comprehensive, high-level perspective and a detailed accounting of the facility's unique GHG emissions inventory. For consistency of reporting and management, the following standard GHG emissions categories are used:

- Scope 1: All direct GHG emissions such as combustion of fuel in Authority-owned sources such as Airport vehicles and boilers.
- Scope 2: Indirect GHG emissions from consumption of purchased electricity.
- Scope 3: Other indirect emissions, such as the aircraft, transport-related activities in vehicles not owned or controlled by the Authority, and off-site waste disposal.

This Plan focuses on the results from the 2015 GHG inventory. See Appendix B for a more detailed assessment of the inventory methodology, and use of the Airport Carbon and Emissions Reporting Tool (ACERT) for GHG reporting. Figure 6 demonstrates the breakdown of the Airport's 2015 GHG inventory by scope.

Figure 6: The Airport's 2015 GHG Scope Breakdown

1.3%   4.8%

93.9%

■ Scope 1 Total   ■ Scope 2 Total   ■ Scope 3 Total
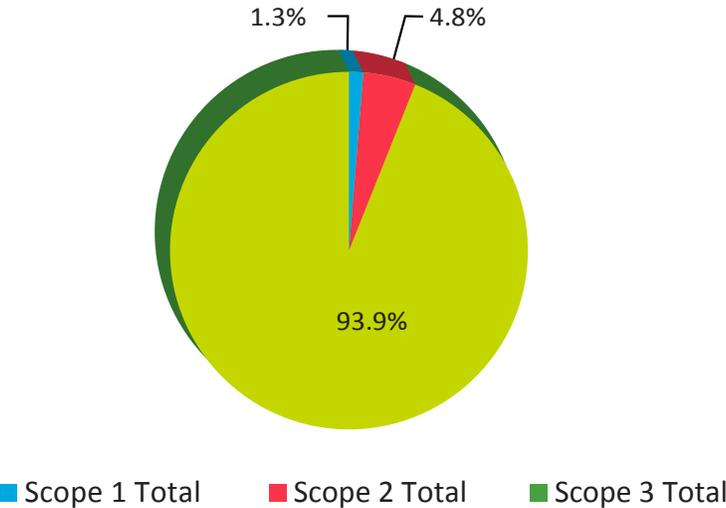
Methodology for Baseline Assessment

The original air emissions inventories (for CY 2014 and CY 2015) were first conducted in 2016, and summarized in a 2014/2015 Emissions Inventories report. Since reporting, the GHG components of the inventory have undergone updates, including:

- Changes recommended or required by the third-party verifier for Level 2 certification for ACA; and
- Transitioning of the GHG inventory data and methodology to ACERT.[5]

In prior years, the Authority completed GHG inventories using various different methodologies. Moving forward, the Authority intends to use ACERT, which was developed by ACI.[6] ACERT is a streamlined, all-encompassing, and standardized tool for airport GHG inventories. The methodologies are consistent with the ACI Guidance Manual on Airport GHG Emissions Management[7], and the tool was set up specifically for ACA reporting. Therefore, the use of ACERT positions the inventory for successful future ACA certification. Further, ACERT was set up to be consistent with the World Resources Institute's GHG Protocol,[8] an internationally recognized standard for GHG inventory principles. By following these standards, the inventory is established as a good tool for the Authority to use to manage the Airport's GHG emissions and track progress toward meeting reduction targets.

2015 GHG Emissions Inventory Results

The results of the GHG emissions inventory are summerized in Table 4 and Table 5.

Table 4: 2015 GHG Emissions Inventory for San Diego International Airport (SAN)

Responsible Entity	Source	Metric tons CO_2e	CO_2e % of Scope	CO_2e % of Total
Authority	Vehicles (incl. airside transport, machinery, and ground support equipment)	1,904.4	47.6%	0.63%
	Buildings (gas/oil/coal)	2,035.4	50.8%	0.67%
	Fire training	0.1	0.0%	0.00%
	Emergency generator	63.7	1.6%	0.02%
	De-icing/glycol	-	-	-
	Waste, water, and refrigerants	-	-	-
	Scope 1 Total	4,003.6	100%	1.32%
Authority	Electricity purchased	14,417.6	100.0%	4.74%
	Heat purchase	-	-	-
	Scope 2 Total	14,417.6	100.0%	4.74%

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Responsible Entity	Source	Metric tons CO_2e	CO_2e % of Scope	CO_2e % of Total
Airport Authority Scopes 1 & 2 Total		18,421.2		6.06%
Airport Authority Sub-total (Scopes 1, 2 & staff business travel)		18,579.1		6.11%
Tenant	Aircraft landing and take-off cycle (LTO)	202,532	70.9%	66.58%
	Aircraft auxiliary power units	3,682.5	1.3%	1.21%
	Aircraft engine run-ups	-	-	-
	De-icing/glycol	2.0	0.0%	0.00%
	Vehicles (incl. airside transport, machinery, and ground support equipment)	3,394.0	1.2%	1.12%
	Buildings (gas/oil/coal)	-	-	-
	Electricity purchased	491.7	0.2%	0.16%
	Heat purchase	-	-	-
	Emergency generator	-	-	-
	Fire training	-	-	-
Tenant/3rd Party	Waste, water, and refrigerants	10,383.1	3.6%	3.41%
3rd Party	Airport constructions (contractors)	-	-	-
Tenant	Tenant staff/visitor vehicles	22,287.5	7.8%	7.33%
Authority	Employee commuting	1,510.6	0.5%	0.50%
	Staff business travel	157.9	0.1%	0.05%
Public Access	Cars, taxis, rideshare companies	40,283.7	14.1%	13.24%
	Bus, shuttles	1,052.7	0.4%	0.35%
	Rail	-	-	-
Scope 3 Total		285,777.7	100.0%	93.94%
Airport Total (Scopes 1,2, and 3)		304,199	-	100%

Notes:

» *Seven (7) $MTCO_2e$ of GHG emissions from refrigerants at the Airport are not included in this table; ACERT does not calculate GHG emissions from refrigerants, as they are categorized as Ozone Depleting Substances.*

Air Pollutants

2015 Air Pollutant Inventory Results

The Airport's 2015 inventory calculation methodology used some data inputs that differ from the ACERT calculation methodology in key ways. As an example, the 2015 inventory calculated airport vehicle emissions based on miles traveled, whereas the ACERT methodology uses fuel consumption to derive the emissions. Accordingly, the air pollutant inventory is not necessarily consistent with the GHG inventory. However, the inputs are appropriate for air pollutant calculations. Table 5 provides a summary of the air pollutant inventory results.

Table 5: 2015 Air Pollutant Inventory for San Diego International Airport

Emissions Source	CO	VOCs	NOx	SOx	PM10	PM2.5	Pb
Aircraft [a]	661	122	784	78	8	8	10 [c]
Auxiliary Power Units	7	1	9	1	1	1	-
Ground Support Equipment	176	15	55	<1	2	2	-
Motor Vehicles – On-Airport Roadways	39	13	6	<1	<1	<1	-
Motor Vehicles – Off-Airport Roadways	836	314	109	1	9	4	-
Stationary Sources [b]	2	<1	3	<1	<1	<1	-
Construction Activities	81	66	46	<1	4	3	-
Totals	**1,803**	**531**	**1,011**	**81**	**25**	**19**	**10**

Notes:
- All values are in short tons. One short ton = 2,000 lbs. Values may reflect rounding.

- CO – carbon monoxide; VOC – volatile organic compounds; NOx – nitrogen oxides; SOx – sulfur oxides; PM10/2.5 – particulate matter equal to, or less than, 10 and 2.5 microns in diameter, respectively; and Pb – lead.

- Results are from the Airport's "2014/2015 Emissions Inventories" document, which was prepared using the FAA guidelines "Aviation Emissions and Air Quality Handbook," and Aviation Environmental Design Tool (AEDT), as well as other federal and California-approved models.

- Footnotes:

  a. Within the Landing/Take-off cycle.
  b. Stationary Sources include boilers, emergency generators, fuel storage tanks, and miscellaneous smaller stationary sources (such as cooking units, air handling units, etc.).
  c. Lead emissions only apply to a subcategory of aircraft – General Aviation, piston-driven aircraft.

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Indoor Air Quality

In addition to meeting stringent state and federal air quality standards, the Authority takes care to manage indoor air quality for the health of everyone at the Airport. Indoor air quality management includes management of issues such as worker or passenger exposure to toxic, harmful, or non/toxic odorous constituents, from off-gassing of sources such as building construction products and cleaning chemicals, mold, etc.

Paint booths are one of the emission sources to manage at the Airport for indoor air quality. According to the Airport's "2014/2015 Emissions Inventories" report, the values in the air pollutant summary Table 5 include volatile organic compounds (VOCs) from airfield marking paint, accounted for because of impacts to local air quality, but do not include VOCs from paint booths at the Airport. Data for this paint use is not readily available, as booths are operated by the airlines. However, the airlines employ appropriate controls to minimize VOC emissions and ensure no impacts to human health.

Asbestos is another consideration, as it is present in walls of multiple buildings throughout the Airport. As asbestos only creates a health hazard when fibers are released into the air where they may be inhaled or ingested, the Authority actively manages materials that have the potential for exposure to ensure that exposure does not occur. The Authority proactively takes all required asbestos management steps, including:

- Enacting a formal Asbestos Operations and Maintenance Plan;
- Annually reviewing, inspecting, and documenting the condition of all asbestos-containing material throughout the Airport;[9]
- Making any necessary repairs identified through such inspections;
- Ensuring proper warning labels in asbestos-containing areas; and
- Giving notice to employees, tenants, and contractors working at any Authority -owned facility that has asbestos-containing construction materials, pursuant to the Asbestos Notification Law (California Health & Safety Code 25915 et seq., and 25915.1 in particular)

02

Goals and Targets

The Authority has established GHG reduction goals and evaluation metrics as a driving framework for action.

The Authority strives to continue building its leadership role in climate change mitigation. This leadership includes alignment with and support of California and aviation industry GHG reduction goals, discussed later in this section. The Airport has been generally using the State of California's GHG milestones of a 15 percent reduction by 2020 and a 49 percent reduction by 2035 (compared to 2010) from all operationally controlled sources, as guideposts for all airport development projects and other carbon management initiatives. This CNP serves to further refine these goals.

In consideration of pre-2015 GHG reduction efforts completed at the Airport, and the relevant industry and regional drivers, the Authority has established the aspirational goals summarized in Table 6. Supporting metrics and performance targets are included to track progress and evaluate success in meeting the goals. Some of the metrics are derived from other plans while others were created through the development of this Plan. Where applicable, the metrics incorporate the reporting requirements for Global Reporting Initiative (GRI) sustainability reporting, which the Authority also uses as key performance indicators and provides in regular annual sustainability reports. The performance targets were established in consideration of Science Based Targets[10] as well as other regional and local drivers as described in the sections below. The Authority is looking to achieve ACA Level 3+ (carbon neutrality) requirements and is implementing stakeholder engagement activities to address Scope 3 emissions. As the Airport is already on a path to carbon neutrality, the Authority has not developed Science Based Targets nor followed the exact methods of Science Based Target setting but incorporates the principles of those methods in this Plan. A position of carbon neutrality is more aggressive than the Science Based Targets which are based on setting an incremental emission reduction target based on a level of decarbonization required to keep global temperature increase below 2 degrees Celsius compared to pre- industrial temperatures.

The following goals and targets are established for the Authority to exceed and / or proactively support regional and industry goals and targets. The goals and targets are ambitious, but achievable, based on the targets set in other plans and the resulting emissions forecast developed for this Plan. Some of the goals overlap with each other, as do some of the targets. However, each goal and target has a distinct purpose, and each GHG reduction initiative included in this Plan was developed to support one or more of the goals and targets.

Table 6: CNP Goals and Targets

Aspirational Goals	Metric	Target(s)	Target Timeframe
1. **Authority – Climate Change** Minimize the Authority's direct operational impact on climate change	Operationally controlled GHG emissions including Scope 1, 2 and Airport staff business travel	80% below 2015 levels	by 2035
2. **Authority – Air Quality** Minimize the Authority's direct operational impact on local air quality	Conversion of stationary combustion equipment to electric or alternative energy sources	100% of Airport-operated units	by 2035
3. **Airport-Wide Emissions** Help airport partners minimize their impact on climate change	GHG intensity, measured by Scope 1, 2, & 3 emissions per passenger	30% below 2015 levels	by 2035
4. **Climate Leadership** Provide regional and industry leadership and collaboration in climate change solutions	ACA Certification	ACA Level 3+ Carbon Neutrality	by 2022*
5. **Airport Plan Integration** Achieve GHG reductions from goals of other plans	GHG-reducing metrics from plans including STEP, WSP, CTP and ZWP	GHG-related targets from STEP, WSP, CTP, and ZWP	as set in various plans

CTP - Clean Transportation Plan
STEP - Strategic Energy Plan
WSP - Water Stewardship Plan
ZWP - Zero Waste Plan

* Goal achieved ahead of schedule in September 2019.

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Goal 1

September 2018
5%

2035
80%

Reduction in operationally controlled GHG emissions compared to 2015 levels

Goal 2

2035
100%

Conversion of stationary combustion equipment to electric or alternative energy sources

Goal 3

2035
30%

Reduction in GHG passenger based intensity compared to 2015 levels

Goal 4

2022*
3+

August 2018
3

3+

1

3

2

ACA Certification 3+ Neutrality Level

Goal 5

STEP

WSP

ZWP

CTP

Achieve GHG related targets included in other Authority plans by 2023

* Goal achieved ahead of schedule in September 2019.

Context for Goal and Target Setting

There are specific aviation industry and California regulatory and market drivers that provide context for the Plan, as well as guidelines for quantifiable GHG reduction target setting and tracking. As the Plan is focused on GHG reduction initiatives, air quality regulatory drivers are summarized in Appendix C. The following summary focuses on the GHG drivers that are relevant for the Authority's goals and supporting initiatives.

Aviation Industry Context

As a sustainability leader in the aviation industry, the Authority has developed its goals to align with or exceed relevant aviation industry GHG drivers.

Airport Carbon Accreditation[11] has become the airport industry's standard for climate change mitigation efforts and carbon neutrality. ACA has four levels of certification, and the highest level defines the ACA requirements for carbon neutrality. The following provides a brief summary of the four levels, and notes the Airport achieved Level 3 "Optimization" certification under the ACA program in 2018.

Spotlight: Offsetting Carbon Emissions

The Authority has been taking significant efforts to reduce GHG emissions in the development and ongoing operation of the Airport but has also been increasingly promoting the use of offsets to address the remaining GHG emissions that cannot easily be implemented and reduced through Authority control. This is an approach that puts the Airport on the path to carbon neutrality.

The Authority is pursuing a two-tier approach on carbon offsets – for the Airport and for the traveling public. For the Airport, the Authority is aligning the emission reduction efforts to the ACA framework by focusing on reducing emissions under the Authority's direct control, planning to offset them in the future, and supporting third parties to work toward the reduction of emissions from sources they own and manage. For the traveling public, the Authority offers The Good Traveler program for passengers to offset their individual travel emissions.

Airport Carbon Accreditation. ACA has become the aviation industry's standard for carbon management and reporting and provides a legitimate, verifiable framework to manage an airport's GHG emissions. ACA was launched by Airports Council International (ACI)-Europe in 2009 and expanded to North America and all other ACI regions in late 2014. ACA has four levels of certification, with the highest level defining requirements for carbon neutrality, which requires the purchase of offset credits for all operationally controlled emissions. The Authority entered the ACA program in 2015 at Level 1 Mapping by preparing and verifying the Airport's carbon footprint. The Authority stepped up its efforts and achieved Level 2 Reduction in 2016 by showing a verified reduction in Scope 1 and 2 GHG emissions, establishing a GHG reduction target, and developing a carbon management plan documenting how the Authority is addressing emissions. The Authority next achieved Level 3 Optimization in 2018, by further enhancing the carbon management program and engaging external stakeholders to achieve additional Scope 3 reduction. The Authority is committed to achieve the highest certification of Level 3+ Neutrality by 2022.

The Good Traveler. To further innovate, the Authority wanted to offer a program that extends the access of offset credits to travelers as a quick and easy way to make passenger air travel more sustainable. The Good Traveler was founded by the Authority in 2015 to allow passenger to offset their travel emissions. The Good Traveler is intended to be different from other offset providers: easy to understand, straightforward to use, and, most importantly, rooted in the local community. The Authority has collaborated with local retailers and attractions to offer offsets from The Good Traveler throughout San Diego and beyond.

To build collaborations across airports, the Rocky Mountain Institute (RMI) was selected to manage operations of The Good Traveler and grow the program. RMI is working to expand airport and retail partners to bring easy-to-use travel offsets to travelers across the country. As of 2018, the program has expanded to include participation from 11 airports across the US and has offset the GHG emissions of over 25 million passenger miles.

What's an offset?

An offset credit, sometimes referred to as "GHG emissions reductions credit," "offset certificate," "offset instrument," is equal to mitigating 1 metric ton CO_2 equivalent ($MTCO_2e$) by paying another party for a verified avoidance of 1 $MTCO_2e$ elsewhere. Monetarily tradeable offset credits are evaluated and certified by an offset standard or program, which provides an established set of rules to ensure that offsets meet the stringent requirements to ensure transparency and credibility. Participation in offset credit programs provides airports with some flexibility in GHG reduction options. Offset credits can also help assign a dollar value to the operational GHG emissions, and thereby help climate leaders evaluate the cost effectiveness of future GHG reduction possibilities. As on-site projects are implemented to reduce an Airport's annual emissions, the airport can show a dollar benefit of the associated annual cost.

- Level 1 (Mapping) was achieved based on the 2015 baseline emissions inventory.
- Level 2 (Reduction) was achieved in 2016, based on the 2015 baseline emissions inventory, and a 0.5 percent reduction from 2014 to 2015.
- Level 3 (Optimization) requires a Scope 3 inventory as well as engagement with stakeholders to encourage and work towards Scope 3 reduction. This Level was achieved in 2018.
- Level 3+ (Neutrality) requires offset of residual emissions under an airport's control.

This Plan also serves as the operational plan and strategy for the Authority to maintain Level 2 and Level 3 accreditation, and set a process for maintaining all requirements for the eventual achievement of Level 3+ "Neutrality" accreditation.

Table 7 provides a more detailed summary of the key ACA requirements, and the Authority's current status for meeting or maintaining each level, all of which require compliance with its own specific requirement, in addition to those from lower levels. Appendix D includes an ACA Index that lists the ACA requirements and how and where those requirements are addressed within this Plan and associated appendices. In addition, the Authority has developed a dedicated Stakeholder Engagement Plan for engaging third parties and addressing Scope 3 emissions, or those emissions that are not under the Authority's direct control, which is included in Appendix A.

Table 7: Requirements for Meeting and Maintaining ACA Certification Levels

ACA Requirement	The Authority's Current Status
Level 1 (Mapping)	
Conducting baseline (Year 0), prior year (Year -1), and annual follow on inventories of all Scope 1 and 2 GHG emissions, verified by an approved third party.	Baseline 2014 (Year -1) and 2015 (Year 0) inventories verified. 2016 (Year 1) inventory completed with different calculation tool (ACERT), to be used for GHG inventory updates moving forward.
Level 2 (Reduction)	
Setting and meeting a challenging but realistic GHG reduction target.	The Authority initially used State of California goals as a proxy. This Plan serves to further refine and enhance those goals.
Annually demonstrating reductions of Scope 1 and 2 GHG emissions against a 3-year rolling average. • Adding an asset (i.e., a new terminal) will not be counted against the reduction target. • Similarly, divesting of an asset will not be counted toward the reduction target.	The Authority met the initial requirement by demonstrating a minimal amount of GHG reduction from 2014 to 2015. Further reductions are expected from actions currently in progress and being planned in this CNP as well as the STEP, WSP, CTP, and ZWP.
Submitting a revised carbon management plan at least every 3 years.	The CNP will serve as this plan for ACA purposes, and will be reviewed at least every 3 years to determine if more formal updates are needed.

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ACA Requirement	The Authority's Current Status
Level 3 (Optimization)	
Conducting an annual inventory of specific categories of Scope 3 GHG emissions.	The Authority's inventory includes all ACA-required sources.
• Landing and Take Off cycle to 3,000 feet • Engine testing and auxiliary power unit operation • Third party GSE operations • Electricity re-sold to or directly purchased by partners/tenants • Surface access by passengers and staff • Airport company staff business travel Third party verification is required for only one of the categories: staff business travel.	
Stakeholder Management Plan, verified by a third party.	The Authority has been actively engaging stakeholders for GHG reduction; this CNP includes a dedicated Stakeholder Engagement Plan which will be reviewed and updated as needed.
Option: Show quantitative verified emissions reductions for at least one Scope 3 source for which there is an active stakeholder engagement initiative in place. Benefit to this option: Move from annual certification renewal cycle to triennial renewal.	The CNP establishes a framework for evaluating which Scope 3 emissions can most feasibly be further reduced, and what reduction actions can be quantified to a verifiable standard.
Level 3 + (Neutrality)	
Achieve "carbon neutrality" by offsetting all remaining GHGs emitted from Scope 1 and 2 sources, as well as employee business travel.	The Authority prioritizes achieving all feasible on-site GHG reduction actions, and will evaluate offsets for remaining emissions. This CNP established a goal to achieve Level 3+ by 2022.

To achieve leadership in sustainability and climate mitigation, the Authority has set a target to achieve carbon neutrality with ACA Level 3+ certification by 2022. The ACA carbon neutrality requirement is beyond any existing regulatory requirements in California or community drivers in San Diego, as well as the threshold for a Science Based Target. Within the overall target of carbon neutrality, the Authority has discretion as to the mix of on-site initiatives and off-site strategies such as renewable energy certificates (RECs) and carbon offsets to be deployed (see "Spotlight: Offsetting Carbon Emissions). The Authority's intention is to create as many of the reductions as possible on-site. Next, the Authority would purchase as many offsets as needed for the initial attainment of carbon neutrality and associated Level 3+ certification and would transition toward more on-site reductions over upcoming years. This push for more GHG reductions at the Airport will also help the Authority maintain Level 2 certification by continuing to show annual reductions of Scope 1 and 2 emissions.

While ACA focuses primarily on an airport's Scope 1 and 2 emissions and the emissions over which the airport has influence, including Scope 3 emissions, a key component of the carbon footprint of air travel is airline/aircraft emissions. For the Airport, airline GHG emissions represent the largest emissions source and nearly 70 percent of the Scope 3 total (see Table 4). As such, the following industry goals are also important and have been considered in the development of goals for this Plan.

- United Nations SDGs: Toward Aviation
  - » Carbon neutral growth from 2020
  - » 50 percent reduction in net emissions based on 2005 levels by 2050
- ICAO
  - » Carbon neutral growth from 2020
  - » 2 percent annual fuel efficiency improvement

Further industry context that was considered in the development of this Plan includes FAA Aviation Emissions[12] and Air Quality Guidance and Next Generation Air Transportation System[13] (NextGen - the FAA program that aims at planning and implementing innovative technologies and procedures to modernize the air transport system).

California and Regional Context

California has some of the most comprehensive GHG laws in the country, including numerous Executive Orders (EOs)[14] and legislation.[15] Additionally, California's State Implementation Plan[16] and the San Diego APCD have multiple requirements for air quality, including measures to address San Diego's current non-attainment with federal Ozone and state Ozone and PM standards.[17] Air quality and climate change are distinct focuses, and local GHG reduction actions provide an air pollutant reduction co-benefit. Appendix B includes detail on relevant air quality regulations, while climate change and GHG-related programs are summarized in the following discussion.

California has state-wide GHG reduction targets, derived from legislative and executive actions as follows:

- Target: By 2020, reduce GHG emissions to 1990 levels
  - » EO S-3-05[18]
  - » Assembly Bill (AB) 32[19]
- Target: By 2030, reduce GHG emissions to 40 percent below 1990 levels.
  - » EO B-30-15[20]
  - » Senate Bill (SB) 32[21]
- Target: By 2050, reduce GHG emissions to 80 percent below 1990 levels
  - » EO S-3-05

> The Authority strives to lead the efforts of sustainability within its community and the industry. Thus, all the Authority's targets meet or exceed the regional and industry targets. To ensure that its goals and targets are leading, the Authority monitors GHG reduction progress at the Airport and takes action to engage stakeholders at the community, regional, and industry level on the latest carbon reporting requirements.

In addition to the targets above for direct reductions of GHGs emitted within California, Governor Brown in September 2018, signed an EO for the State of California to achieve carbon neutrality by 2045[22].

The City of San Diego's 2016 Climate Action Plan (CAP)[23] aligns with these state targets, and the city recently adopted a commitment to 100 percent renewable energy by 2035. The County of San Diego recently adopted its CAP[24] which also aligns to these targets. The San Diego region continues to work toward all California requirements for climate mitigation including SB 375[25] and the California Environmental Quality Act.[26] The region supports these requirements through established GHG reduction targets[27] as well as in the Regional Transportation Plan[28] and the Regional Housing Needs Assessment.[29]

Aside from the MOU, the Authority is not currently required to reduce GHGs under California or local GHG regulations. However, California climate change policies are relevant to the Airport. Appendix E highlights the most Airport-relevant aspects of California Air Resources Board (CARB)'s 2017 Climate Change Scoping Plan update, which sets California's path to meeting the state-wide GHG targets[30]. Although the Scoping Plan does not set specific objectives for airports to support GHG mitigation, California's GHG regulations impact, and will be impacted by, this Plan and the Authority's GHG reduction plans. The following are some of the key impacts:

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- The Authority's GHG reduction efforts support California's GHG reduction goals. The Authority continues to take a proactive approach to addressing its own GHG emissions. The Authority can use CARB's GHG goals and intentions as context for developing and communicating Airport GHG goals and supporting initiatives.

- California's state-wide GHG reduction policies and programs support the Authority's GHG targets. Some of the state-wide policies will lead to reductions of the Airport's GHG emissions. These projected reductions from external drivers are incorporated into this Plan to the extent possible, through inclusion in the GHG emissions forecasts, initiatives, and funding considerations.

- California may develop new GHG regulatory requirements that apply directly to the Airport. Beyond the requirements of any regulation, the Authority is interested in emissions mitigation to serve the principles of sustainability. With the overarching aim of sustainability, the Authority hopes that the initiatives described in this Plan and others ensure the Airport is readily in compliance when regulations do arise.

Benefits of Air Quality Improvements for the San Diego Community and Environmental Justice

GHG emissions are distinct from other air pollutants in that GHGs cause the same global impact, regardless of where they are emitted. Just as importantly, solutions to reduce GHG emissions globally must not cause shifts in localized air pollutants. California's Cap-and-Trade program has the potential to shift air pollution to less advantaged communities; therefore, local GHG reductions are important as most provide co-benefits of air pollutant reductions. Based on this consideration, California's Environmental Justice Advisory Committee have indicated the increased importance of reducing criteria and toxic air pollutants along with GHGs in California's Climate Change Scoping Plan.

Although this Plan addresses all air emissions from Airport operations, the forecast, reduction targets, and initiatives are focused primarily on GHG emissions, with the understanding that the local GHG reduction actions will have co-benefits of reducing criteria pollutants. While the Authority is not setting air pollutant reduction targets, the GHG reduction initiatives are expected to provide improvements to local air quality and thereby create regional health benefits. Conversely, initiatives to improve air quality by reducing fuel combustion will also have GHG reduction benefits.

In developing and committing to the goals and targets in this Plan, the Authority intends to support California in meeting its GHG reduction targets and continue in a leadership role in climate change mitigation. As such, the Authority can use them as guidelines such as noted below.

- California's interim 2030 GHG reduction target (i.e., 40 percent below 1990 levels) is meant to be reached through all applicable California GHG-related regulations, which do not currently require anything of the Airport. Accordingly, the GHG reduction contributions at the Airport would be supplemental to California regulations.

- Setting the Airport 2035 reduction target to exceed California's 2030 target sets up the Authority to support California's target of meeting the 2050 reduction target (i.e., 80 percent below 1990 levels). The 2017 Scoping Plan update only has clear policies to reach the 2030 target and alludes to the fact that much greater effort will be needed to reach the 2050 target. While CARB does not explicitly say that voluntary initiatives from unregulated entities will be necessary to help reach the target, it suggests this potential scenario.

- Reaching the 2050 California target will involve new regulatory requirements that could apply to the Airport. The Authority intends to continue its tradition of being proactive and ahead of regulatory requirements. For example, vehicle electrification is a major push in California. By taking action before new requirements are enacted, the Authority can potentially obtain grant funding for these initiatives, and through its initiatives can help pave the way for the state-wide shift toward vehicle electrification. Authority vehicle and equipment initiatives already conducted through the MOU measures are ahead of current state-wide regulations, and the Authority is going further from there. Some of these activities include the following:

  » The Authority is participating actively in CARB's working group for its Zero Emission Airport Shuttle Bus Program.[31] From 2018 to 2022, the Authority can take advantage of incentives for voluntary purchases of electric shuttle buses. Requirements for conversion to fully electric fleets will then be phased over upcoming years, currently projected from 2023 through 2031.

  » The Authority's MOU measure to electrify the GSE fleet is also ahead of state-wide regulations. Conversion of the remaining fleet is therefore potentially eligible for funding through the Carl Moyer programs (discussed in the Funding Sources and Strategy section).

GHG Emissions Forecast - Business as Usual (BAU)

To put the goals and targets into context, Figure 7 and Figure 8 provide projected forecasts of the Airport's GHG emissions based on the current operations (BAU) and forecasted growth rates.

Figure 7: Forecast of Airport-Wide GHG Emissions Based on Current Operations
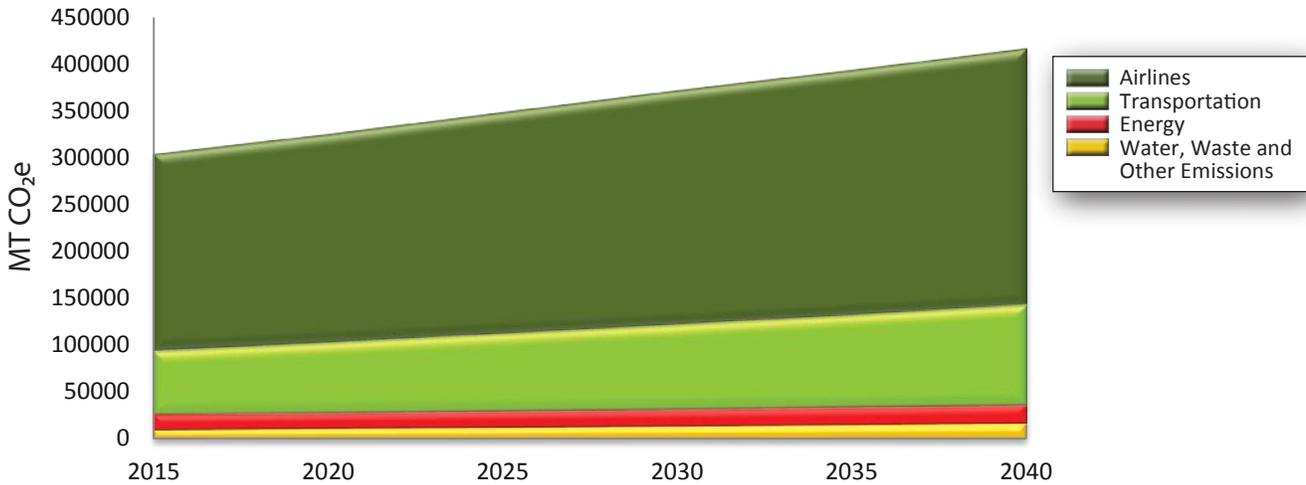
Figure 8: Forecast of GHG Emissions Under the Authority's Direct Control Based on Current Operations
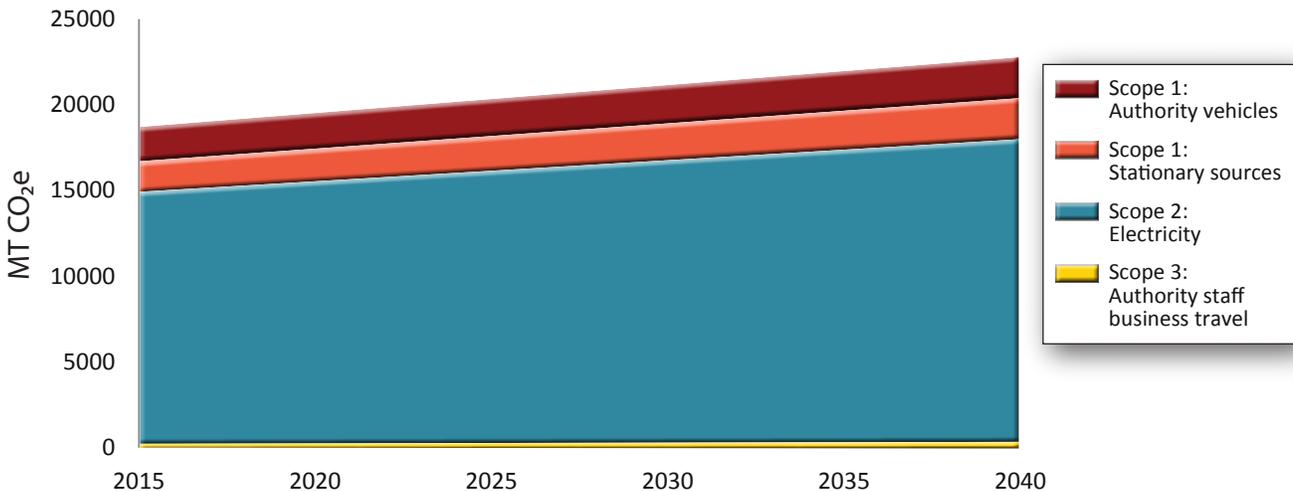
As Figure 8 shows, the forecasted future-year emissions would greatly exceed the Authority's targets. Accordingly, GHG reduction measures are necessary to reach those targets. An important step in evaluating how those reductions will be achieved is to consider regional and aviation industry drivers of GHG reductions, and how they will affect the Airport.

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GHG Emissions Forecast - External Reduction Initiatives

Based on the California and aviation industry-wide drivers summarized in the previous section, Figure 9 and Figure 10 provide forecasts of the Airport's reduced GHG emissions. The external reductions include the following:

- ICAO[32] and SDG[33] actions toward reaching carbon neutral growth starting in 2020.
- The most recent projections from University of San Diego's Energy Policy Initiatives Center (EPIC)[34] for Federal and California Vehicle Efficiency Standards, as well as the local electricity utility San Diego Gas & Electric's increase in renewable energy based on the California Renewables Portfolio Standard, through 2030.

Figure 9: Forecast of Airport-Wide GHG Emissions with External Reductions
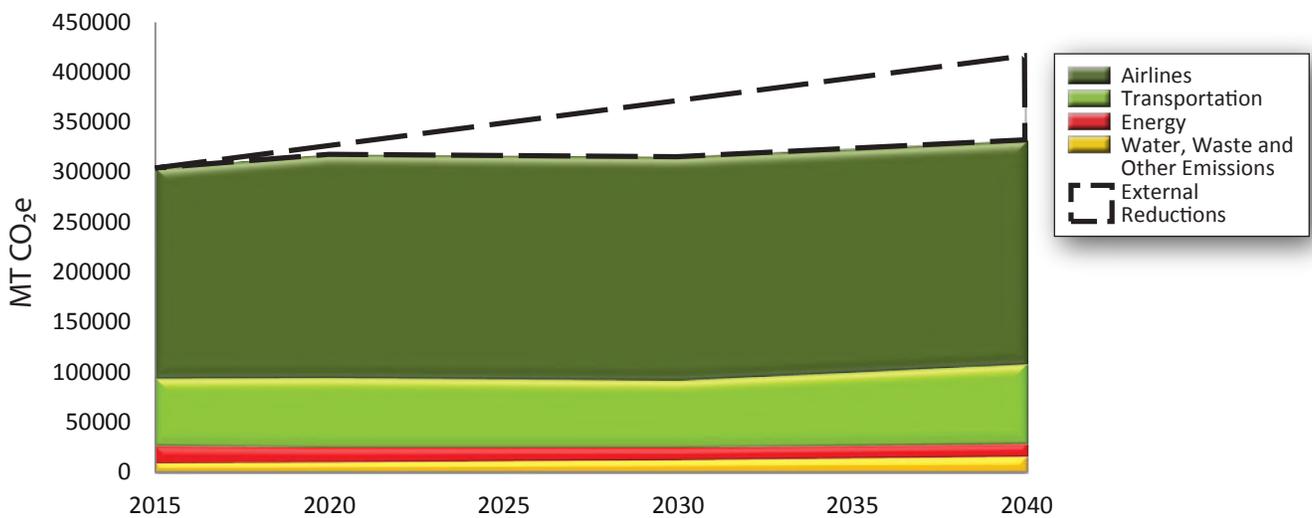

Figure 10: Forecast of GHG Emissions under the Authority's Direct Control with External Reductions
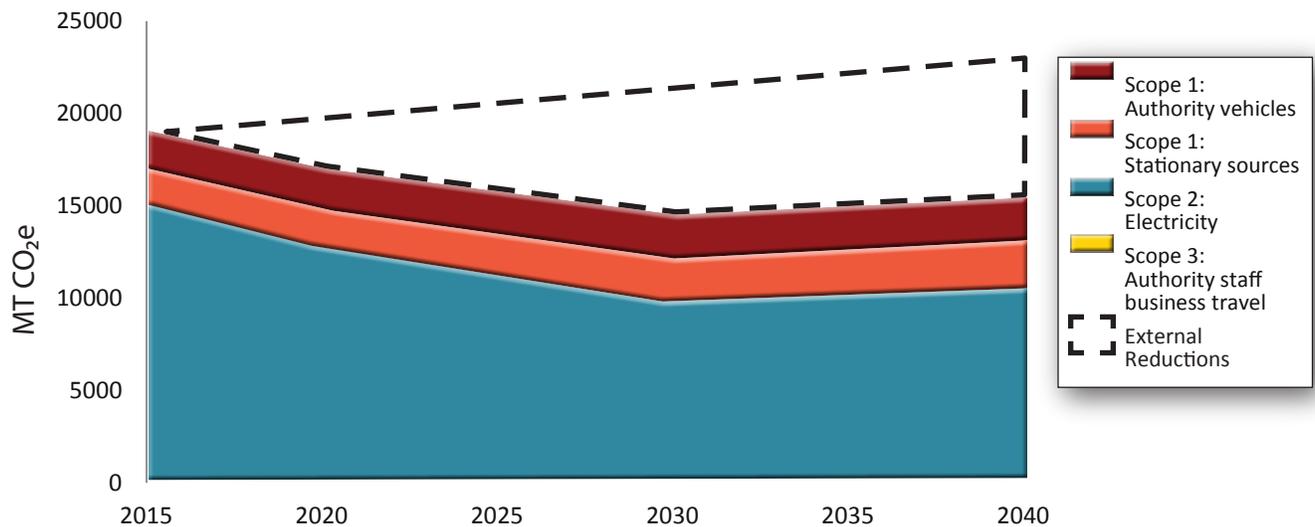
California has set ambitious GHG reductions goals and targets to 2050. However, the current regulations and policies only institute specific methods to reduce GHGs through 2030. While it is assumed that California will finalize further policies to meet its goals, only established concrete policy actions are included in the forecast above. This approach for forecasting external reductions is consistent with EPIC's regional analysis and results in the inflection point shown in Figure 9 and Figure 10, as which, GHG emissions are shown to increase from 2030 to 2050.

A key takeaway from the GHG forecast analysis is that while state-wide initiatives will help the Authority achieve its GHG reduction goals, initiatives from public agencies such as the Authority will also be important for helping California achieve its state-wide 2050 target. Regarding the Airport's own GHG emissions, Figure 9 and Figure 10 demonstrate that:

- external drivers will help reduce the Airport's emissions; and
- those emissions are still projected to exceed the Authority's targets.

To achieve further GHG reductions, the Authority has developed numerous initiatives across the focus areas, which are discussed throughout the remainder of this Plan.

GHG Emissions Forecast - External + Internal Reduction Initiatives

Each initiative included in this Plan was developed to support one or more of the established goals and targets. Some of the initiatives are expected to directly reduce emissions in the short term. Others are more progressive, or may depend on collaboration with external stakeholders, and may result in more regional or industry-wide impacts than direct benefits to the Airport. Accordingly, the following forecast is not based on specific calculations of reductions expected from each initiative, but rather assumes that the Authority will achieve its overall GHG reduction goals from implementing the key initiatives. Based on the types of reductions that can reasonably be expected from the combination of those initiatives, Figure 11 and Figure 12 provide ambitious, but achievable, forecasts of the Airport's reduced GHG emissions through 2040.

Figure 11: Forecast of Airport - Wide GHG Emissions with Internal and External Reductions

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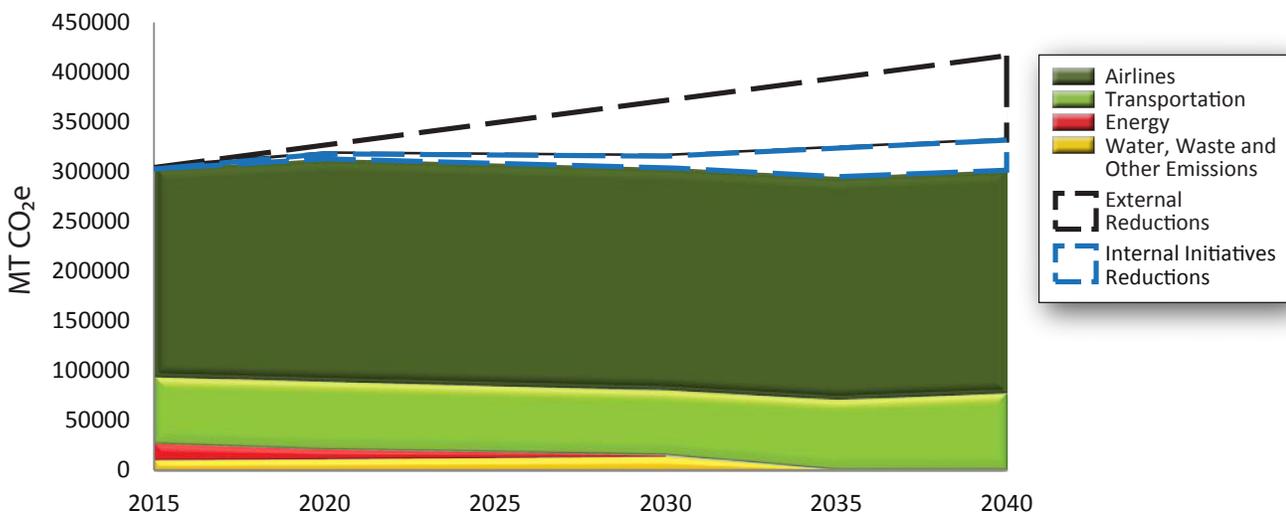
Figure 12: Forecasted Intensity of Airport-wide GHG emissions with External and Internal Reduction initiatives
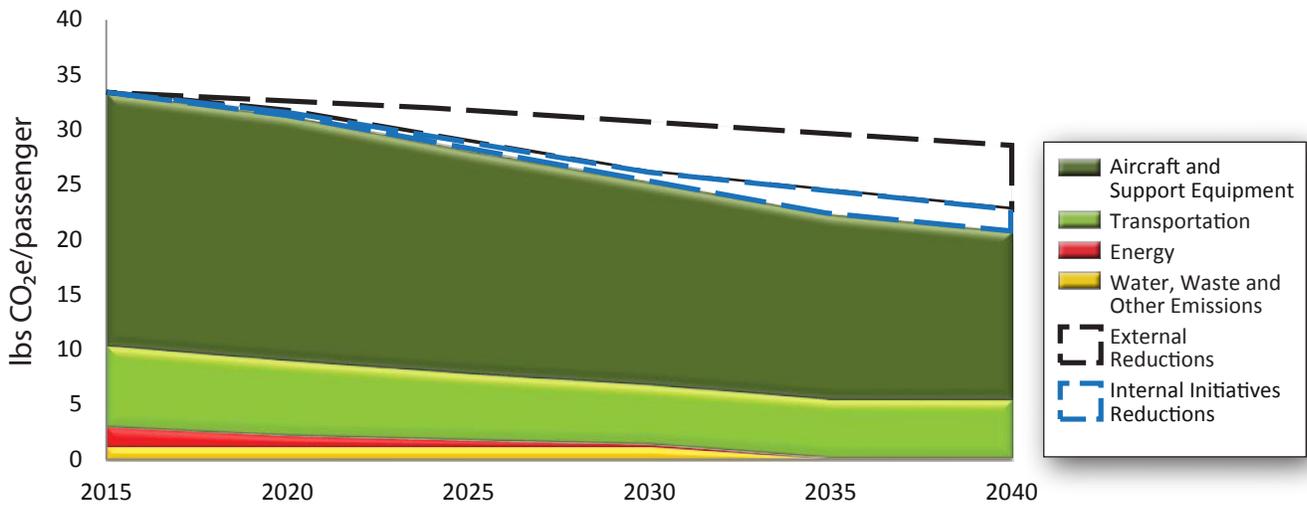
Figure 13: Forecast of GHG Emissions Under Authority Direct Control with External and Internal Reduction initiatives
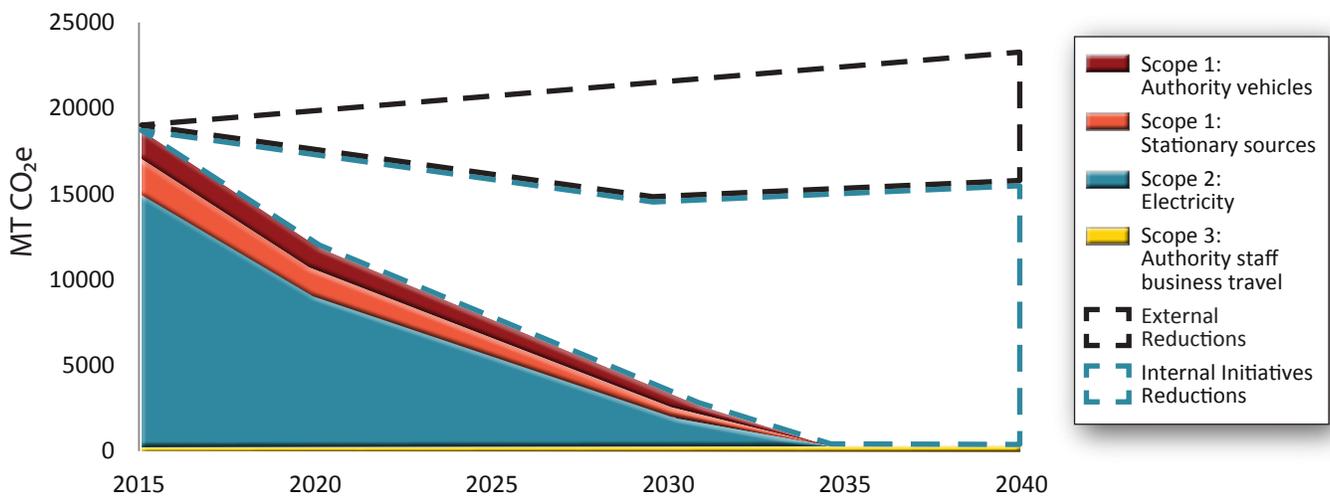
Figure 11, Figure 12 and Figure 13 demonstrate that through the external drivers and the Authority's own initiatives, GHG emissions can be reduced to or below the target levels. This will be a significant accomplishment for the Authority and help cement its leadership role in climate change mitigation. Specifically:

- Figure 11 reflects emissions from Airport-wide sources, in support of the Airport-Wide Emissions goal. The majority of those sources are not directly owned by the Authority. For example, most of the transportation emissions are related to people traveling to the Airport, and the Authority has limited control over reducing those emissions. Likewise, the Authority has very little influence over emissions from aircraft and supporting functions per federal law.

- Although the Airport-wide absolute emissions are not forecasted to decrease, the intensity of those emissions are expected to decrease based on the efficiency improvements noted previously. Figure 12 demonstrates that through external and internal GHG reduction initiatives, the Authority can meet the GHG intensity reduction target of the Airport-Wide Emissions goal.

- Figure 13 reflects absolute emission reductions from Authority-owned sources, in support of the Authority–Climate Change goal. As the Authority has the most control over these sources, the forecast reflects its ability to directly reduce the emissions from them.

03

Initiatives to Reduce GHGs

The Authority has identified and evaluated the most promising initiatives to reduce GHG emissions from sources directly controlled or influenced by the Authority.

The Authority intends to continue its sustainability leadership by expanding on GHG reduction initiatives that have already been successful and engaging in new initiatives that have been developed for this Plan and determined to be valuable. The initiatives were developed through collaboration and dialogue with internal stakeholders, which helps identify the most appropriate and feasible initiatives, and based on a thorough vetting of ideas from multiple sources, including:

- Existing airport plans, including the Strategic Energy Plan, Water Stewardship Plan, and Clean Transportation Plan;
- Aviation industry sources for GHG reduction, including the Sustainable Aviation Guidance Alliance;
- Airport Cooperative Research Program (ACRP) reports, ICAO, and Air Transport Action Group;
- Sustainability and GHG / Carbon Plans from peer airports; and
- Other team experience.

Based on the process summarized above, the Authority developed and selected the most promising initiatives to continue reducing Airport-related GHG emissions. A summary of the selected initiatives is provided below in Table 8 and is organized by the baseline inventory GHG source categories and Plan Focus Areas.

Table 8: Focus Areas & Initiatives Summary

Focus Area	GHG Specific Source	Authority Level of Control	Initiatives and Other Plans Associated
Airlines and Aircraft (68% of Total MTCO$_2$e)	Aircraft	Influential*	AA-1, AA-2, AA-3, AA-4, AA-5, AA-6, AA-7, AA-8
	Aircraft auxiliary power unit	Influential	
	GSE	Influential	
Transportation (23% of Total MTCO$_2$e)	Authority vehicles	Direct	T-1, CTP
	Tenant staff and visitor vehicles	Influential	
	Authority employee commuting	Influential	
	Authority staff business travel	Direct	
	Public access vehicles - cars, taxi	Influential	
	Public access vehicles - bus, shuttles	Influential	
Energy (6% of Total MTCO$_2$e)	Electricity	Direct	E-1, E-2, E-3, E-4, STEP
	Natural gas - Central Utility Plant boilers	Direct	
	Diesel - Generators, fire training	Direct	

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Focus Area	GHG Specific Source	Authority Level of Control	Initiatives and Other Plans Associated
Waste, Water, & Other (3% of Total $MTCO_2e$)	Aircraft de-icing (airlines)	Influential	PE-1, PE-2, PE-3, WSP, ZWP
	Waste	Influential	
	Refrigerants	Direct	
	Water and wastewater treatment	Influential	
Carbon Leadership	Positive, climate mitigation impact, in the long term.	Influential	CL-1, CL-2, CL-3, CL-4, CL-5, CL-6, CL-7

Per federal law, the Authority has very little influence over aircraft engines and supporting functions. In addition, Pilots in Command (PIC) have final decision-making authority over aircraft operations.

It should be noted that some initiatives address more than one of the five focus areas. Furthermore, the Carbon Leadership focus area was added to address initiatives that will lead to a positive longer-term impact on global and potentially local GHG emissions, but which may not result in an immediate GHG emissions reduction at the Airport.

The following sections for each focus area detail the key initiatives, including a summary of which goals they support, and practical considerations for implementation. The initiative summary tables for each focus area details the supporting tactics, Airport department responsibility, and the intended timeframe for implementation.

Initiatives – Airlines and Aircraft

Aircraft are the largest sources of GHG emissions at the Airport. As the airlines are not under the Authority's direct control, and, in fact, the Authority has very limited influence over aircraft engines, jet fuel, and supporting functions, reducing emissions from aircraft requires effective coordination. However, the Authority has had success in working with airlines to reduce aircraft emissions, implementing initiatives such as pre-conditioned air and electrification with 400 Hz power at all gates. Further progress is possible at the Airport and beyond but will require multi-stakeholder collaboration to achieve, such as addressing:

- Aircraft movement and operational efficiency at the Airport;
- Sustainable aviation fuels; and
- Aircraft fuel efficiency improvements.

Table 9 summarizes the key initiatives that the Authority developed to encourage and support reductions in GHG emissions associated with the airlines and from aircraft at the airport and beyond.

Table 9: Initiatives: Airlines and Aircraft Focus Area

ID	Initiative	Goals	Tactics	Authority Lead(s)	Time Horizon
AA-1	Promote sustainable aviation fuel usage or other aircraft fuel efficient technologies	Airport-wide Emissions/ Climate Leadership	Evaluate and consider needed infrastructure and/or distribution channels to support biofuel usage.	P&E/ADC	Mid-Term
			Promote R&D/investment to support increase in biofuel usage, efficient aircraft, transportation technologies, or other industry specific needs.	P&E	Near-Term
			Have the Airport serve as a pilot project for biofuel or any emission-reduction project.	P&E	Near-Term
			Form a biofuel task force and engage with airlines about options to increase onsite biofuel usage.	P&E/ASP	Near-Term
AA-2	Enhance policies and contract terms for sustainability and air quality	Airport-Wide Emissions/ Climate Leadership	Develop policies to encourage fuel efficient equipment and / or operational efficiency for on-site airline equipment.	FMD/A&T	Near-Term
			Upgrade rules regarding ground electrification.	P&E/A&T	Near-Term
			Implement permitting program for airline GSE.	P&E/ASP	Near-Term
			Collaborate with airlines on carbon offset programs.	P&E/RGP	Near-Term
			Have aircrafts use fossil fueled Ground Power Units quickly to reduce engine exhaust.	P&E/ASP	Near-Term

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ID	Initiative	Goals	Tactics	Authority Lead(s)	Time Horizon
AA-3	Evaluate opportunities to provide ground power electrification.	Airport-Wide Emissions/ Climate Leadership	Identify and prioritize remote pads for conversion.	FMD/ASP	Mid-Term
			Review findings of ACRP Report 02-76 (Optimizing the Use of Electric Pre-Conditioned Air and Ground Power Systems at Airports), when available.	P&E	Near-Term
			Identify funding opportunities such as VALE grants.	P&E	Near-Term
AA-4	Encourage airspace improvements and other airfield efficiencies, such as aircraft take off, landing, and taxiing efficiency	Authority– Air Quality/ Airport Wide Emissions/ Climate Leadership	Explore possibility of using ground movement radar for this purpose. Also use for FOD elimination.	P&E/ASP	Mid-Term
			Explore innovative technologies and new best practices for efficient movement of aircraft on airfield and ramps.	P&E/FMD	Near-Term
			Periodically review aircraft docking systems for technology improvements and efficiency.	P&E/FMD/ ASP	Near-Term/ Ongoing
AA-5	Install and provide direct access to an underground fuel hydrant system at all aircraft gates	Airport-Wide Emissions/ Climate Leadership	Complete the current CIP to integrate hydrant fueling with FIS gates.	P&E/FMD	Near-Term
			Use hydrant fueling for Terminal 1 replacement.	P&E/FMD	Mid-Term
			Retrofit parts of Terminal 2 to incorporate hydrant fueling.	P&E/FMD	Long-Term
AA-6	Reduce gate congestion to help move aircraft through gates more efficiently	Authority– Air Quality/ Airport Wide Emissions/ Climate Leadership	Leverage gate optimization software.	ASP/A&T	Near-Term
AA-7	Encourage airlines to source food from local concessions vs through airlines.	Climate Leadership	Assist airlines in connecting with local and community-supported agriculture organizations.	P&E/RGP	Mid-Term

ID	Initiative	Goals	Tactics	Authority Lead(s)	Time Horizon
AA-8	Create an incentive/ engagement program for airlines to adopt sustainable practices.	Climate Leadership	Have airline representatives engage at airport level and at industry level (e.g., ACI-NA, AAAE).	A&T/P&E	Near-Term
			Expand current Green Concessions Program to also include airlines.	A&T/P&E	Near-Term
			Create quarterly communication/ check-in meetings with airline environmental representatives.	P&E	Near-Term
			Explore incentives and programs to accelerate the transition for airlines moving to electric GSE.	P&E	Near-Term

A&T - Airside & Terminal Operations
ADC - Airport Design & Construction
ASP - Aviation Security & Public Safety
FMD - Facilities Management
P&E - Planning & Environmental Affairs
RGP - Revenue Generation & Partnership Development

Near-Term - 0-5 Years
Mid-Term - 5-10 Years
Long-Term - 10+ Years

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Initiatives - Transportation

Transportation is the second largest source of GHG emissions at the Airport. As the majority of transportation emissions are not under the Authority's direct control, reducing their emissions requires effective coordination with tenants and community stakeholders. The Authority has had success in reducing vehicle emissions, such as through conversion of the Authority-owned shuttles to alternative fuels. However, the deployment of alternative fuel vehicles must take into consideration safety needs, operational characteristics, and fueling infrastructure availability. Table 10 summarizes the key initiatives the Authority developed to encourage and support reductions in GHG emissions associated with transportation to, from, and around the Airport.

A more detailed analysis of transportation-related GHG emissions reduction initiatives is included in the CTP.

Table 10: Initiatives: Transportation Focus Area

ID	Initiative	Goals Supported	Tactics	Authority Lead(s)	Time Horizon
T-1	Use Clean Transportation Plan activities to increase vehicle fuel efficiency and alternative fuel use	Authority–Climate Change/ Authority–Air Quality/ Airport Wide Emissions/ Climate Leadership/ Airport Plan Integration	Convert Authority fleet and encourage third parties to use zero or low emissions vehicles.	P&E/FMD/GT	Mid-Term
			Support use of alternative transportation modes (e.g., bikes).	P&E/GT	Near-Term
			Support the reduction of emissions for staff business travel and employee commute.	P&E	Near-Term
			Continue to manage and support programs to facilitate shared rides (e.g., carpool, vanpool), and reduce congestion.	P&E/GT	Ongoing
			Reduce emissions from construction equipment.	ADC/FMD	Near-Term
			Strengthen inter-agency collaboration regarding regional transit, and work towards increasing public transit ridership.	P&E/GT	Ongoing

ADC - Airport Design & Construction
FMD - Facilities Management
GT - Ground Transportation
P&E - Planning & Environmental Affairs

Near-Term - 0-5 Years
Mid-Term - 5-10 Years
Long-Term - 10+ Years

Initiatives - Energy

Non-transportation-related energy, electricity in particular, is the largest source of emissions under the Authority's direct control. Because of its importance, the Authority developed the Strategic Energy Plan (STEP) to provide energy goals, a roadmap toward energy independence, and improved carbon footprint of energy use at the Airport. Table 11 summarizes the key GHG-related initiatives developed through the STEP, as well as further initiatives developed through this Plan. A detailed analysis of energy and related GHG emissions reduction initiative is included in the STEP.

Table 11: Initiatives: Energy Focus Area

ID	Initiative	Goals Supported	Tactics	Authority Lead(s)	Time Horizon
E-1	Use Strategic Energy Plan activities to increase energy efficiency and renewable energy use.	Authority–Climate Change/ Authority–Air Quality/ Airport-Wide Emissions/ Climate Leadership/ Airport Plan Integration	Integrate conservation and resilient design into tenant improvement guidelines, facility criteria document and the design review process.	ADC/A&T	Near-Term
			Implement a robust sub-monitoring program.	FMD/ADC	Near-Term
			Implement an energy auditing process for all facilities.	FMD/ADC	Near-Term
			Complete retro-commissioning.	FMD/P&E/ RGP/ADC	Near-Term
			Execute active energy management and monitoring.	FMD/P&E	Near-Term
			Install on-site chilled water energy generation and storage capacity.	FDM/ADC	Mid-Term
			Provide incentives to promote energy conservation and stewardship.	P&E	Near-Term
			Enhanced stakeholder engagement to optimize Airport operational efficiency (Create and deploy energy education program).	P&E	Near-Term
			Install renewable energy generation in a cost-effective manner.	ADC/FMD/ P&E	Long-Term
			Participate in direct access and community choice aggregator programs.	P&E/FMD	Mid-Term
			Develop energy metrics.	P&E/FMD	Near-Term
			Maximize use of big data.	P&E/FMD	Near-Term
			Perform periodic validation of the energy master plan.	P&E/FMD	Mid-Term
			Pilot new and emerging energy technology.	P&E/FMD	Mid-Term

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ID	Initiative	Goals Supported	Tactics	Authority Lead(s)	Time Horizon
E-2	Implement phase-out plan for each stationary combustion unit.	Authority–Climate Change/ Authority–Air Quality/ Airport-Wide Emissions/ Climate Leadership	Complete an updated inventory of stationary combustion equipment at the Airport.	P&E/FMD	Near-Term
			Evaluate alternative options for each unit including electric, biofuels, and fuel cells.	P&E/FMD	Near-Term
			Select the optimal conversion technology for each unit given its operational purpose, and streamline implementation through coordination with related STEP initiatives.	P&E/FMD	Mid-Term
E-3	Establish further policies to promote environmental responsibility.	Authority–Climate Change/ Authority–Air Quality/ Airport-Wide Emissions/ Climate Leadership	Establish policies for energy-reducing workspace behaviors, such as limiting the use of workspace heaters.	P&E/FMD	Near-Term

A&T - Airside & Terminal Operations
ADC - Airport Design & Construction
FMD - Facilities Management
P&E - Planning & Environmental Affairs
RGP - Revenue Generation & Partnership Development
STEP - Strategic Energy Plan

Near-Term - 0-5 Years
Mid-Term - 5-10 Years
Long-Term - 10+ Years

Initiatives – Waste, Water, and Other Emissions

The focus area for these emissions includes processes such as potable water conveyance for the Airport's use, waste disposal, and use of refrigerants. Although these emissions involve other stakeholders, the Authority has the ability to reduce them. Table 12 summarizes the key initiatives to reduce the associated emissions, compiled primarily from the Water Stewardship Plan (WSP). The initiatives developed here also inform the Zero Waste Plan (ZWP).

Table 12: Initiatives: Process Emissions Focus Area

ID	Initiative	Goals Supported	Tactics	Authority Lead(s)	Time Horizon
PE-1	Use Water Stewardship Plan activities to reduce the airport's use of potable water.	Authority–Climate Change/Airport-Wide Emissions/Climate Leadership/Airport Plan Integration	Tap new sources of water.	P&E/ADC/FMD	Mid-Term
			Develop a closed-loop water system.	P&E/FMD	Near-Term
			Leverage energy management opportunities that promote water conservation.	P&E/FMD	Near-Term
			Pursue facility & fixture retrofits.	ADC/FMD	Mid-Term
			Install water efficient & resilient landscaping & irrigation.	ADC/FMD/P&E	Near-Term
			Require new developments to integrate water efficient & reuse technology.	ADC/P&E	Near-Term
			Update landscaping & irrigation design guidelines to require water efficiency & resilience.	ADC	Near-Term
			Install smart meters & real-time data monitoring technology.	ADC/P&E/FMD	Near-Term
			Provide incentives to promote water stewardship.	ADC/P&E	Near-Term
			Integrate water conservation & resilient design in tenant improvement guidelines & design review process.	P&E/ADC	Near-Term
PE-2	Use Zero Waste Plan development process to evaluate further GHG reduction.	Authority–Climate Change/Airport Wide Emissions/Climate Leadership/Airport Plan Integration	Expand and enhance recycling and waste reduction programs.	P&E/FMD	Near-Term
			Expand waste diversion efforts such as food recovery program, to include participation with all tenants and airlines.	P&E/A&T	Near-Term
			Evaluate the feasibility of building an anaerobic digester for food and other waste.	P&E/ADC	Mid-Term
			Improve waste awareness and education programs for tenants and passengers.	P&E/A&T	Near-Term

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ID	Initiative	Goals Supported	Tactics	Authority Lead(s)	Time Horizon
PE-3	Prevent atmospheric release of high global warming potential and ozone depleting refrigerants.	Authority–Climate Change/ Airport Wide Emissions/ Climate Leadership	Identify low-Global Warming Potential and zero-Ozone Depletion Potential alternatives to the current refrigerants being used at the Airport.	P&E	Near-Term
			Create phase out plan and schedule for R-123.	P&E/FMD	Mid-Term
			Apply best practices for preventing refrigerant leaks.	P&E/FMD	Near-Term

A&T - Airside & Terminal Operations
ADC - Airport Design & Construction
FMD - Facilities Management
GHG - greenhouse gas

P&E- Planning & Environmental Affairs
RGP - Revenue Generation & Partnership Development
WSP - Water Stewardship Plan
ZWP - Zero Waste Plan

Near-Term - 0-5 Years
Mid-Term - 5-10 Years
Long-Term - 10+ Years

Initiatives – Carbon Leadership

The Carbon Leadership focus area encompasses initiatives that are particularly innovative or progressive, span multiple GHG emissions categories, and/or will require multi-stakeholder collaboration to achieve long-term GHG reductions for the Airport and its key stakeholders. Table 13 summarizes the key initiatives that the Authority developed to advance the Airport's carbon leadership position both in the region and industry.

Table 13: Initiatives: Carbon Leadership Focus Area

ID	Initiative	Goals Supported	Tactics	Authority Lead(s)	Time Horizon
CL-1	Integrate carbon (emissions reductions, cost) into airport capital and operations planning as well as project design and construction.	Authority–Climate Change/ Airport-Wide Emissions/ Climate Leadership	Consider carbon intensity/impact of specific projects (in CIP), going deeper than broader sustainability impact. Use carbon emissions reduction as a CIP evaluation factor for projects.	P&E	Near-Term
			Establish an internal cost of carbon to support sustainable decision-making.	P&E/RGP	Near-Term
			Pursue achievements for Envision credits CR1.1 (Reduce Greenhouse Gas Emissions) and CR1.2 (Reduce Air Pollutant Emissions).	P&E	Near-Term

ID	Initiative	Goals Supported	Tactics	Authority Lead(s)	Time Horizon
CL-2	Continue ongoing GHG management and certification under the ACA program.	Authority–Climate Change/ Airport-Wide Emissions/ Climate Leadership	Continue to complete yearly GHG inventory (ACERT).	P&E	Near-Term
			Manage annual ACA certification process.	P&E	Near-Term
			Evaluate the optimum procurement package of all necessary offsite reduction measures including offset credits and RECs, to achieve ACA Level 3+ Neutrality.	P&E	Near-Term
CL-3	Evaluate industry-specific market-based measures for GHG reduction projects to support the Airport and the broader aviation community.	Authority–Climate Change/ Airport-Wide Emissions/ Climate Leadership	Monitor and support airlines' implementation of aviation-specific offset programs, such as CORSIA.	P&E	Ongoing
			Develop creative funding opportunities for GHG reduction projects at the airport.	P&E/RGP /PRO/ SBD/GR/ FMD	Ongoing
CL-4	Actively engage and participate with local / regional organizations and within industry groups to promote policies and practices aimed at reducing GHG emissions associated with air travel.	Airport-Wide Emissions/ Climate Leadership	Engage ACI-NA and other aviation industry leaders on strategies to achieve airport and airline carbon neutrality.	P&E	Ongoing
			Consider a multi-industry integrated working group to discuss cross-functional sustainability issues. Could consider ACI-NA Sustainability Working Group to facilitate this initiative.	P&E/ FMD/ ADC	Near-Term
			Engage ACA and other aviation industry leaders for potential of an industry-wide GHG Reduction Fund.	P&E	Near-Term
			Explore opportunities to engage other local/ regional organizations and groups on carbon leadership and carbon initiatives.	P&E	Ongoing
			Engage regulators to proactively address regulations that limit or constrain environmental practices.	P&E	Ongoing

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ID	Initiative	Goals Supported	Tactics	Authority Lead(s)	Time Horizon
CL-5	Evaluate expansion of sustainable procurement practices for ongoing purchases and contracting with vendors, contractors, and other suppliers.	Airport-Wide Emissions/ Climate Leadership	Review the Authority's existing Environmentally Preferable Purchasing Policy (EP3) and consider tie in for operations and construction, tenants, airlines, and contractor.	P&E	Near-Term
			Implement GHG / sustainability performance requirements for contractors.	P&E/ FMD/ ADC	Near-Term
CL-6	Enhance public outreach and reporting programs on the topic of GHG and carbon leadership.	Climate Leadership	Highlight the Authority's GHG management and accreditation efforts in annual sustainability report and other communications.	P&E	Ongoing
			Promote passenger participation in offset purchase programs such as The Good Traveler program.	P&E	Ongoing
			Explore program alignment and/or reporting with CDP and/or SDGs to advance the Authority's carbon leadership position.	P&E	Ongoing

A&T - Airside & Terminal Operations
ACA - Airport Carbon Accreditation
ACERT - Airport Carbon and Emissions Reporting Tool
ACI-NA - Airports Council International North America
ADC - Airport Design & Construction
CDP - former Carbon Disclosure Project
CIP - Capital Improvement Program
FMD - Facilities Management
GHG - greenhouse gas
GR - Governmental Relations
P&E - Planning & Environmental Affairs
PRO - Procurement
REC - renewable energy certificates
RGP - Revenue Generation & Partnership Development
SBD - Small Business Development
SDG - Sustainable Development Goals

Near-Term - 0-5 Years
Mid-Term - 5-10 Years
Long-Term - 10+ Years

04

Funding Sources and Strategy

The Authority has established a process for identifying and positioning for potential funding opportunities for GHG reduction initiatives.

Table 14 summarizes programs that could potentially support the Authority's GHG-reduction initiatives. Many of these programs would involve collaboration with other stakeholders. In some cases, other stakeholders would be the primary applicant, and the actual recipient of funds. However, the Airport and/or its passengers would benefit from reduced GHG emissions and other secondary benefits such as improved infrastructure or ease of access. It should be noted that airports do not receive revenue from local taxes, but rather are financially self-sufficient enterprises relying on user fees. In addition, there are federal restrictions for using this revenue for non-airport purposes.

Table 14: Summary of Funding Programs

Funding Programs	Program Summary	Potential Areas for Application
FAA's VALE program	As summarized on the FAA website: VALE improves airport air quality and provides air quality credits for future airport development. Created in 2004, VALE helps airport sponsors meet their state-related air quality responsibilities under the Clean Air Act. Through VALE, airport sponsors can use Airport Improvement Program funds and Passenger Facility Charges to finance low emission vehicles, refueling and recharging stations, gate electrification, and other airport air quality improvements.[35]	The Authority has been successfully using VALE funding and will continue doing so to help enact projects that reduce GHG and air pollutant emissions at the Airport.
FAA FRMA, Section 512	Section 512 of the FMRA encourages public use airports to identify opportunities to increase energy efficiency and directs the Department of Transportation to consider grants for the airport to acquire or construct equipment, including hydrogen equipment and related infrastructure, to achieve the goal of increasing energy efficiency.	This funding program could potentially be used to help fund a number of the CNP initiatives, related to electricity (STEP), vehicles (CTP), and stationary equipment.

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Funding Programs	Program Summary	Potential Areas for Application
CARB's Carl Moyer program	As summarized on CARB's website: The Carl Moyer Memorial Air Quality Standards Attainment Program (Carl Moyer Program) provides grant funding for cleaner-than-required engines and equipment. Local air districts administer these grants and select which projects to fund. The CARB works collaboratively with the districts and other stakeholders to set Guidelines and ensure the Program reduces pollution and provides cleaner air for Californians. The Carl Moyer Program achieves reductions in emissions of key pollutants which are necessary for California to meet its clean air commitments under regulatory requirements. Eligible projects include cleaner on-road trucks, school and transit buses, off-road equipment, marine vessels, locomotives, agricultural equipment, light-duty vehicle scrap, and lawn mowers.[36]	This air quality-specific funding can be used to reduce air pollutants. Some of the vehicle and equipment upgrades result in less fossil fuel combustion and thereby also reduce GHG emissions. It is believed that this program can be used by the Authority, airlines, and shuttle operators to assist in securing funds for equipment not mandated by federal, state, or local regulations.
Volkswagen (VW) settlement fund	As summarized on the USEPA website: The U.S. government and VW have resolved allegations that VW violated the Clean Air Act by selling approximately 590,000 vehicles equipped with defeat devices. As a part of this settlement, VW will provide $2.7 billion for the 2.0-liter violating vehicles and $225 million for the 3.0-liter violating vehicles to an Environmental Mitigation Trust. Funds from the trust will be used to fully remediate the excess NOx emissions from the illegal vehicles. Beneficiaries may select from a defined list of ten Eligible Mitigation Actions that have proven records of reducing NOx emissions.	To date, the Authority has applied for funding from this program for four Authority initiatives that will reduce GHGs as well as air pollutants: • Employee EV Charging Stations • Passenger EV Charging Stations • Airside Electric Charging Infrastructure • ZEV Outreach & Incentives for Taxis/TNCs

Funding Programs	Program Summary	Potential Areas for Application
California GHG Reduction Fund: Transportation and Sustainable Communities Funding Programs » Public transportation improvements could help increase non-vehicle trips to the airport. » All have the co-benefit of air quality improvements » The Authority could coordinate with the appropriate transportation agencies to apply for funding		
CalSTA Transit and Intercity Rail Capital Program	Transformative capital improvements that modernize California's intercity rail, bus, ferry and rail transit system • Connectivity to existing/future rail systems by adding new rail cars/engines • Increased service and reliability, and decreased travel times of intercity and commuter rail systems • Rail integration (e.g., integrated ticketing and scheduling	• CTP • Focus areas including Employee Transportation and Public Transit • The Authority in collaboration with local agencies
Caltrans LCTOP	• New/expanded bus, rail services, or expanded intermodal transit facilities • Service or facility improvements, e.g., equipment, fueling, and maintenance • Priority on serving disadvantaged communities	• CTP • Focus areas including Employee Transportation, and Public Transit • The Authority in collaboration with local agencies
Caltrans Active Transportation Program	• Bike facilities • Pedestrian facilities	• CTP • Focus areas including Employee Transportation, and Congestion and Emission Reduction
Strategic Growth Council Affordable Housing and Sustainable Communities Program	• Transit-oriented development • Intermodal affordable housing • Transit capital projects • Active transportation/complete streets • Local planning and implementation	• CTP • Focus areas including Employee Transportation and Public Transit • The Authority in collaboration with local agencies
California Air Resources Board Low Carbon Transportation	• Zero and near-zero emission passenger vehicle rebates • Heavy duty hybrid/ZEV trucks and buses • Freight demonstration projects • Pilot programs (car sharing, financing, etc.)	• CTP • Primarily the Alternative Fuels and Vehicle Efficiency focus area

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Funding Programs	Program Summary	Potential Areas for Application
California GHG Reduction Fund: Clean Energy and Energy Efficiency Funding Programs		
Department of Water Resources Water-Energy Grant Program	• Water conservation and efficiency grants • Commercial and Institutional programs • Projects that reduce GHGs, water, and energy use	STEP or WSP initiatives that reduce both energy and water
California GHG Reduction Fund: Natural Resources and Waste Diversion Funding Programs		
CalRecycle Waste Diversion programs	• Organics Grant Program • Recycled Fiber, Plastic, and Glass Grants • Greenhouse Gas Reduction Loan Program • Food Waste Prevention and Rescue Grant Program	Zero Waste Plan initiatives

CARB - California Air Resources Board
CNP - Carbon Neutrality Plan
CTP - Clean Transportation Plan
EV - Electric Vehicle
FAA - Federal Aviation Administration
FMRA - FAA Modernization and Reform Act
GHG - greenhouse gas
LCTOP - Low Carbon Transit Operations Program
*NOx - nitrogen oxides*
STEP - Strategic Energy Plan
USEPA - U.S. Environmental Protection Agency
VALE - Voluntary Airport Low Emissions
VW - Volkswagen
WSP - Water Stewardship Plan
ZEV - Zero Emission Vehicle

05

Implementation and Monitoring Program

The Authority has developed a monitoring program to track progress of the GHG reduction strategy and facilitate data collection, sharing, evaluation, and reporting from and among Airport stakeholders.

This Plan is meant to be an operational plan for the Airport to reduce GHG emissions and improve air quality and allow for ongoing, future program assessment and evaluation. The Plan is intended to be a hands-on management tool that will be regularly referenced and updated as needed or required. Therefore, robust supporting tools and resources are appropriate so that the implementation plan can serve its primary purpose – to support and enable the air emissions and carbon management program and monitor progress toward meeting the established goals and targets.

The Authority currently tracks its sustainability progress reporting using GRI standards, which includes the following GHG-related metrics:

- Direct (Scope 1) GHG emissions (GRI Disclosure 305-1)
- Energy indirect (Scope 2) GHG emissions (GRI Disclosure 305-2)
- GHG emissions intensity (GRI Disclosure 305-4)

Further, the annual inventories conducted in ACERT and reported to ACA provide a deeper level of detail on the Airport's GHG emission sources. These inventories therefore support GRI reporting, as well as the more detailed monitoring of the Authority's progress toward meeting specific GHG reduction goals and targets and potentially tracking the success of specific initiatives. Essentially, the combination of GRI reporting and ACA reporting and accreditation captures monitoring of all goals and targets developed in this Plan.

Additionally, progress towards the achievement of goals and implementation of GHG reduction initiatives is communicated in the Authority's annual Sustainability Report. This report, available online at sustain.san.org, is developed in accordance with GRI standards and provides updated information for several of the Authority's sustainability focus areas, including GHG management and reduction.

Table 15 summarizes the established goals and targets and the monitoring approach that will be used. In addition to the above monitoring protocol, the Authority also uses various spreadsheets and monitoring tools to compile data and track progress (e.g., waste tracking tool), monitor implementation of activities (e.g., spreadsheet to track actions, responsible party/department, funding) as well as a one-page monitoring dashboard.

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CARBON NEUTRALITY

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Table 15: Authority Goals and Targets Monitoring

Aspirational Goals	Metric(s)	Target	Monitoring
1. **Authority – Climate Change** Minimize the Authority's direct operational impact on climate change	Operationally controlled GHG emissions	80% below 2015 levels	Scope 1: ACERT / ACA, GRI 305-1, Scope 2: ACERT / ACA, GRI 305-2 Staff business travel: ACERT / ACA
2. **Authority – Air Quality** Minimize the Authority's direct operational impact on local air quality	Conversion of stationary combustion equipment to electric or alternative energy sources	100% of operationally-controlled units	The complete equipment inventory will track the specific conversions. ACERT / ACA and GRI (305-1) track the resulting GHG emissions.
3. **Airport-Wide Emissions** Help Airport partners minimize their impact on climate change	GHG intensity, measured by Scope 1, 2 & 3 emissions per passengers	30% below 2015 levels	Emissions intensity is tracked through GRI 305-4. Stakeholder collaboration efforts will be documented in the Stakeholder Management Plan required for ACA.
4. **Climate Leadership** Provide regional and industry leadership and collaboration in climate change solutions	ACA Certification	ACA Level 3+ Carbon Neutrality	ACA provides a recognized aviation-certification of the Authority's climate change leadership. Specific documentation of the innovative, unique, and/ or collaborative initiatives developed in this CNP will further highlight the Authority's regional and industry leadership.
5. **Airport Plan Integration** Achieve GHG reductions from goals of other plans	GHG-reducing metrics from plans including STEP, WSP, CTP, and ZWP	GHG-related targets from other plans	STEP monitoring summary WSP monitoring summary CTP monitoring summary ZWP monitoring summary

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Endnotes

1. https://www.faa.gov/airports/aip/
2. Airport Carbon Accreditation was launched by Airports Council International (ACI)-Europe in 2009 and expanded to North America and all other ACI regions in late 2014. http://www.airportcarbonaccreditation.org/
3. https://www.arb.ca.gov/cc/sb375/sandag_fact_sheet.pdf
4. http://ag.ca.gov/cms_attachments/press/pdfs/n1556_agreement.pdf
5. Since 2016, the Authority uses the Airport Carbon and Emissions Reporting Tool (ACERT) developed by Airports Council International (ACI) to complete all GHG inventory updates, which provides consistent reporting of emissions from the categories listed
6. www.aci.aero/About-ACI/Priorities/Environment/ACERT
7. www.aci.aero/Publications/Full-Publications-Listing/Guidance-Manual-Airport-Greenhouse-Gas-Emissions-Management
8. www.ghgprotocol.org/
9. The Airport's most recent asbestos inspection is documented in the 2017 Asbestos Reinspections report, available at http://www.san.org/Portals/%Documents/Environmental/2017%20Annual%20Asbestos%20Reinspections.pdf
10. http://sciencebasedtargets.org/
11. Airport Carbon Accreditation was launched by Airports Council International (ACI)-Europe in 2009 and expanded to North America and all other ACI regions in late 2014. http://www.airportcarbonaccreditation.org/
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