REQUEST FOR CITY COUNCIL ACTION

MEETING DATE: JUNE 27, 2023

TITLE: CLIMATE ACTION AND ADAPTATION PLAN STRATEGY AND SCHEDULE

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RECOMMENDED ACTION

Authorize staff to proceed with public outreach efforts and finalization of the Climate Action and Adaptation measures.

EXECUTIVE SUMMARY

On February 14, 2023, the City Council directed staff to proceed with development of a Climate Action and Adaptation Plan (CAAP), including continuing public outreach, to develop draft targets and measures based on their potential to reduce greenhouse gases, address environmental injustices, and increase equity.

This report proposes the approach to developing final CAAP measures, a public outreach strategy to build community consensus, and a timeline for the outreach, finalization of measures and preparation of the California Environmental Quality Act (CEQA) environmental documentation. The goal for the CAAP is for it to be a consensus document that is equitable, reasonable, achievable, and measurable. The CAAP will also be designed to avoid conflict with other city goals, such as continued development to support the provision of affordable housing.

Staff is seeking City Council authorization to proceed with developing further the broad categories of regulations and city actions discussed in the body of this report, and to commence outreach efforts to develop consensus around these measures.

COMMISSION/BOARD/COMMITTEE RECOMMENDATION

Not applicable.

ANALYSIS

Ascent Environmental, the consultant preparing the CAAP, highlights three areas to consider as actions to reduce greenhouse gas emissions are being developed:

- Establish draft greenhouse gas (GHG) emissions reduction targets for 2030 and 2045 for the City's CAAP that are in alignment with State plans and laws,

- Quantify GHG emissions reduction potential of available policy measures in 2030 and 2045 (where feasible using available data, research, and other evidence) to demonstrate technically feasible pathways that could achieve the 2030 and 2045 GHG reduction targets, and
- Identify available actions within the jurisdiction or influence of the City government that could be taken to implement the measures.

In September 2022, Ascent Environmental began to develop a set of measures and actions for the City to achieve GHG reduction targets informed by the state targets of 48% below 1990 levels by 2030 (per the 2022 California Air Resource Board Scoping Plan), and 85% below 1990 levels by 2045 (per Assembly Bill 1279). The 2022 GHG inventory performed for the CAAP found that the on-road transportation, building energy, and solid waste sectors are responsible for the majority of the City's GHG emissions. As a result, these sectors are the main focus of the proposed set of measures to reduce emissions. Achieving GHG reduction targets will require measures that address emissions from both future development and the existing built environment.

The proposed set of measures to achieve necessary GHG reduction targets are divided into the following categories of activities that take place within the City's jurisdiction:

Building Energy

This category of measures includes a focus on the development of regulations to require the electrification of new construction and retrofits of existing construction to reduce GHGs in the built environment. There is a focus on energy efficiency and modernization of both municipal and communitywide building infrastructure as well as renewable energy. Examples include:

- Eliminate the use of natural gas in new construction
- Retrofit existing residential and multifamily buildings to improve energy efficiency and facilitate fuel switching
- Ensure enrollment in the 100% renewable energy rate with power providers and facilitate net zero energy projects
- Increase renewable energy in new construction

On-Road Transportation

Transportation remains the largest source of GHGs in Irvine. Measures to reduce emissions focus on a rapid and expansive deployment of public electric vehicle (EV) chargers, increased public transit ridership, and other transportation improvements. Examples include:

- Increase the number of public EV chargers and require increased EV charging in new development
- Expand bicycling and walking options through infrastructure improvements

- Increase transit ridership through the enhancement and expansion of connected transit lines

Land Use

To achieve GHG reduction targets, land use designations addressing density, parking, affordability, and the urban forest will be amended through updates to the General Plan and Zoning Ordinance. Examples include:

- Increase high-density, transit-oriented development along primary corridors
- Create car-free areas and pedestrian malls
- Expand the urban forest and require new building materials to reduce the urban heat island effect

Fleet Vehicles and Off-Road Equipment

Electrification of the municipal fleet and maintenance equipment will provide a reduction in emissions. This measure category also recommends citywide policies. Examples include:

- Transition the municipal vehicle fleet and off-road equipment inventory to zero emission
- Develop policies to accelerate replacement of gas-powered equipment and backup generators within the City to zero emission options

Solid Waste and Water

Waste represents the third largest source of emissions, and another opportunity for GHG reductions. These measures will focus on improved waste handling and reductions in water consumption. Examples include:

- Increase diversion of inorganic waste from landfills, including recyclable materials and construction and demolition waste
- Implement waste reduction measures such as a single use plastic ban and the facilitation of repair and reuse programs for consumer products
- Reduce water consumption through efficiency requirements, educational campaigns, and drought tolerant landscaping

Each of the proposed categories include opportunities over which the City has direct oversight and regulatory authority, incentive-based approaches for residents and the development community, and supportive actions that include collaboration with regional agencies, local institutions and community-based organizations.

In advance of the finalized CAAP, staff will be pursuing energy efficiency and electrification audits and upgrades for City facilities, including the installation of solar panels and battery systems, public and fleet electric vehicle chargers, and other measures designed to reduce energy consumption and fossil fuel use.

Public Outreach Strategy

Since December 2022, staff has engaged Irvine's diverse set of stakeholders on potential CAAP measures through one public workshop, 12 virtual and in-person community presentations, various targeted stakeholder meetings, community events, and an interactive online survey. Collectively, staff has engaged with over 840 residents and stakeholders through these outreach efforts. The goal of this outreach has been to raise awareness of Irvine's climate planning efforts and provide community members with meaningful opportunities to provide input and imagine a climate-smart future. Feedback from these efforts included a desire for improved transportation networks, increased adoption of electric vehicles and charging infrastructure, more renewable energy, and building electrification.

Internal reviews were also conducted with staff from all city departments regarding proposed measures/ actions with feedback collected on possible CAAP measures.

Over the course of the summer, staff will conduct a second round of external stakeholder outreach, including the development community, realtors, affordable housing advocates, regional agency partners, and community organizations, on the proposed set of measures in order to develop a final list of measures for Council review.

Schedule

Should the City Council direct staff to proceed with the measures and outreach strategy described above, staff will immediately begin engaging with key stakeholders in the community and interest groups representing the development, real estate, transportation, and environmental sectors. The goal of these efforts is to develop a consensus CAAP document that incorporates the City's and community's priorities. The following schedule provides estimated timeframes for the major project milestones:

- Public Outreach: July – August
- Draft of CAAP Measures: September – October
- Presentation of CAAP Measures and CEQA Scope to City Council – November
- Commencement of CAAP CEQA Process: December
- Certification of CEQA document: Fall 2024

ALTERNATIVES CONSIDERED

City Council may modify the proposed categories of CAAP measures to pursue, may direct an alternate outreach strategy, or may direct modifications.

FINANCIAL IMPACT

Costs associated with development of CAAP measures and public outreach efforts will be absorbed by the current Project Delivery & Sustainability budget and consultant contracts. No additional budget allocation is needed at this time.

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ATTACHMENT

1. Proposed Measures and Actions

City of Irvine Climate Action and Adaptation Plan – Proposed Measures and Actions
City Council Meeting, June 27, 2023

Building Energy

Strategy	Measure Code	Measure	GHG Reductions ($MTCO_2e$)		Key Actions	Examples/Notes
			2030	2045		
Energy Efficiency and Electrification	BE-1.1	Facilitate energy audits for existing buildings to identify energy efficiency retrofit and electrification opportunities.	Not quantified separately	Not quantified separately	• Work with the Orange County Power Authority (OCPA), Southern California Edison (SCE), and other partners to provide free energy audits of existing residential and nonresidential buildings, prioritizing low-income neighborhoods. • Perform energy audits on City facilities and repeat audits every five years as recommended in the *City of Irvine Distributed Energy Resources (DER) Implementation Plan*. • Work with the Southern California Regional Energy Network (SoCalREN) to expand technical support services for residential and nonresidential buildings communitywide, including energy audits, identifying energy efficiency improvement measures, and energy efficiency performance specifications. (Services are only available to public agencies currently) • Seek public-private partnerships (e.g., BlocPower) to fund energy audits and building electrification in the community. • Launch partnership with SCE and XeroHome™ to facilitate and scale residential energy upgrades. • Support development of OCPA's Online Marketplace for discounted residential smart home devices.	• Menlo Park • Ithaca • Denver • San Jose • Petaluma • Santa Monica XeroHome will help Irvine residents identify cost-friendly solutions to reduce energy use and decarbonize their homes. Residents will get tailored recommendations about the efficiency upgrades that best fit their individual needs.
	BE-1.2	Retrofit existing residential buildings (single family, and multi-family less than 20,000 square feet) to improve energy efficiency and facilitate fuel switching.	16,375	99,202	• Develop a comprehensive energy retrofit program to transition existing residential buildings to all-electric, aiming for a 72% conversion rate by 2045. Begin program providing incentives. Consider point-of-sale and retrofit requirements in the future, as noted below. • Adopt an ordinance requiring a U.S. Department of Energy (DOE) Home Energy Score (HES) Assessment and energy efficiency upgrades for existing residential building additions or alterations with a permit value of $50,000 or higher. • Adopt an ordinance requiring a DOE HES Assessment and energy efficiency upgrades for existing residential buildings at point of sale. • Connect building owners to funding resources and financing options for energy efficiency retrofits and improvement projects. • Secure funding to expand the features of the One Irvine program incentives for home retrofits, including Permit Fee Holiday, Residential Rehabilitation Program, Green Home Grants, and Home Improvement Loans through other programs available to residents (e.g. proposed Climate Resilience Rebate program). • Continue implementation of the Switch is On campaign to promote home electrification that provides Irvine residents access to one-on-one advisors, vetted contractors, and information about incentive programs and rebates.	• Carlsbad CA • Encinitas CA • Town of Fairfax • Palo Alto CA • Marin County • Piedmont CA Greater than 50% foundation replacement considered new development and subject to electrification ordinance: • Alameda CA • Burlingame CA • Daly City CA • Dublin CA • East Palo Alto CA These measures will require a large outlay of capital to achieve as well as implementation challenges. City will coordinate with stakeholders on benefits and reporting requirements.
	BE-1.3	Retrofit existing multi-family (20,000 square feet and larger) and nonresidential buildings to improve energy	11,309	91,307	• Develop a comprehensive energy retrofit program to transition existing nonresidential buildings to all-electric, aiming for a 46% conversion rate by 2045. Begin program providing incentives then transition to retrofit requirements. • Pilot an all-electric retrofit at University Community Center as recommended in the *City of Irvine Distributed Energy Resources (DER) Implementation Plan.*	• Chula Vista CA • New York NY These measures will require a large outlay of capital to achieve as well as implementation challenges.

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		efficiency and facilitate fuel switching.			• Adopt a Building Performance Standard that requires owners of multi-family, commercial and industrial buildings 20,000 square feet and larger to benchmark annually on the Energy Star Portfolio Manager platform and perform audits and building upgrades for low-performing buildings. • Require benchmarked buildings to display their energy efficiency scores label in a conspicuous location near each public entrance. • Incentivize the use of alternatively powered backup generators, facilitating the elimination of fossil fuel-powered backup generator permits for existing nonresidential development in alignment with State goals.	AB-1346 bans the sale of Small Off-Road Engines (SORE), effective for gasoline-powered generators in 2028. Diesel and propane are exempt from the legislation. The mix in the City includes diesel-powered generators.
	BE-1.4	Reduce plug loads in existing buildings.	Not quantified separately	Not quantified separately	• Use partnerships to promote appliance upgrades to energy-efficient technologies and products through campaigns targeted at residents and local businesses, ENERGY STAR® appliance change-out programs, and incentives (e.g., giveaways, federal/state/utility rebates). • Facilitate the adoption of smart grid and other peak load reduction technologies, such as building energy management systems and smart appliances, within new and existing buildings.	Title 24 includes the provision of Energy Management Systems (EMS) in new development.
Low Carbon Development	BE-2.1	Eliminate the use of natural gas in new development by January 2025	5,333	29,389	• Implement the Building Electrification Ordinance, effective January 1, 2025. • Partner with SoCalREN, OCPA, SCE, other cities, and the private sector to develop effective strategies to facilitate electrification implementation.	• Albany CA • Brisbane CA • Contra Costa County CA • Cupertino CA • Glendale CA • Livermore CA • Los Angeles CA
	BE-2.2	Implement and enforce REACH building codes and Green Building Standards.	Not quantified separately	Not quantified separately	See BE-2.1	Includes natural gas elimination in new development and compliance with California Green Building Standards Code
	BE-2.3	Eliminate fossil fuel-powered backup energy sources by 2028.	Not quantified separately	Not quantified separately	See BE-1.3	CARB requires most newly manufactured small off-road engines, such as those found in leaf blowers, lawn mowers and other equipment, be zero emission starting in 2024. Portable generators, including those in recreational vehicles, would be required to meet more stringent standards in 2024 and meet zero-emission standards starting in 2028.
	BE-2.4	Implement smart grid technologies to include two-way communication and control capabilities between buildings and the electric grid.	Not quantified separately	Not quantified separately	• Expand use of smart grid technologies in Irvine, building from SCE's smart-grid demonstration in Irvine in partnership with U.S. DOE. (See: Demo - IG (epri.com) • Expand smart grid deployment to OCPA services and customers. • Integrate smart grid technologies into City facilities starting with one or more pilot projects at City facilities identified in the *City of Irvine Distributed Energy Resources (DER) Implementation Plan*.	• Grid-Interactive Efficient Buildings • Building Integration with Smart Grid
	BE-2.5	Facilitate net zero energy projects.	Not quantified separately	Not quantified separately	• Require all newly constructed City facilities to be zero net energy by 2030. • Transition all existing City facilities to zero net energy (ZNE) by 2035. • Also See BE-2.1, BE-3.2, and BE-3.3 for actions that capture this transition citywide.	• San Diego CA Note: Additional gap financing may be needed for 100% affordable housing developers. ZNE would be captured through combination of electrification and increased onsite

						renewables in the referenced actions.
	BE-2.6	Reduce high-GWP refrigerants.	Not quantified separately	Not quantified separately	• Partner with OCPA and SCE to implement a natural refrigerant incentive program (See Sacramento Municipal Utilities District pilot program here.)	
	BE-2.7	Implement a Green Building Program.	Not quantified separately	Not quantified separately	• Continue implementation of Irvine Build Green Program and expand it to incorporate building energy actions listed herein. • Continue Irvine's expedited building permitting and consider additional incentives for retrofits and new development (such as a density bonus) that meet or exceed adopted reach codes or to implement voluntary provisions (Tier 1 or Tier 2) of the California Green Building Standards Code (CALGreen). • Require all new municipal buildings and major renovations of municipal buildings to be built to at minimum the US Green Building Council's LEED Gold level, or equivalent, where feasible.	Note: Current City policy requires LEED certification, with a goal of LEED Gold, where feasible.
Clean Energy	BE-3.1	Enroll 100% of communitywide accounts in 100% renewable/zero-carbon option from OCPA.	154,070	—	• Conduct outreach to residents and business owners to increase awareness of OCPA's carbon-free electricity supply, and encourage retention at 100% renewable service level. • Maintain awareness of SCE's 100% Renewable Green Rate availability and seek rate competitiveness with OCPA service.	
	BE-3.2	Increase renewable energy installations in existing buildings.	Not quantified separately	Not quantified separately	• Work with regional partner agencies and utilities, such as SoCalREN, OCPA, and SCE to promote State rebates and other incentives and funding opportunities for renewable energy. • Continue implementation of Solarize Irvine to provide access to group pricing discounts for solar power and battery storage, and disseminate information to community members and HOAs to facilitate installation of solar and storage. • Implement the *City of Irvine Distributed Energy Resources (DER) Implementation Plan* to increase energy efficiency and implement DERs at City facilities and community buildings. • Prioritize installation of renewable energy and battery storage at City-owned facilities with the most positive payback period for offsetting 100% of electricity use with a combination of solar and battery storage as identified in the *DER Implementation Plan.* • Continue supporting SOMAH Program that provides financial incentives for installing photovoltaic energy systems on multifamily affordable housing in California. • Provide incentives for replacing existing swimming pool heaters with solar versions.	Note: Solarize Irvine Program expanding to include non-profits, businesses, and promotion of the Solar on Multifamily Affordable Housing (SOMAH) program.
	BE-3.3	Increase renewable energy in new development.	Not quantified separately	Not quantified separately	• Adopt a reach code by 2026 that requires all new residential and nonresidential buildings to generate onsite renewable energy to meet anticipated energy consumption of the building. • Consider requiring the installation of solar heaters for all new residential swimming pools by 2026 in advance of State legislation. • Consider requiring all newly built parking structures to have solar generation capabilities by 2026 (in advance of State legislation. • Encourage the installation of solar canopies on surface parking lots on private property, and consider a resolution for incorporating solar canopies on City properties. • Consider incentives to encourage private properties to install solar and storage, e.g. extended payment of taxes for equipment, reduction/waiver of Utility Users Tax, etc. similar to programs in Washington.	Note: Title 24 establishes combined solar PV and battery standards for new construction. Systems are sized to maximize onsite use of solar energy. Refer to solar highway projects in Oregon, Georgia, and Massachusetts as examples.
	BE-3.4	Develop innovative approaches to energy generation, distribution, and storage.	Not quantified separately		• Develop renewable microgrids at fire and police stations and other emergency facilities located in the city in partnership with Orange County Fire Authority. • Collaborate with OCPA, SCE, and partner agencies such as IUSD to encourage non-municipal public service facilities (e.g., local schools and hospitals) to develop renewable microgrids, separate from utility-scale storage systems. • Require battery storage readiness design in new nonresidential construction building types where not already required by the 2022 Energy Code to accelerate the installation of solar and energy storage in alignment with State goals. Battery-readiness means buildings must be wired so energy storage systems can easily be added later on.	• Fremont Microgrid Projects 2022 California Energy Code, requires: - Installation of solar and battery storage on new commercial buildings and high-rise multifamily buildings

					• Encourage and incentivize opportunities for integrating battery storage readiness in existing homes and businesses at the time of retrofit and/or in conjunction with renewable energy generation installations. • Consider opportunities for alternative energy generation, energy recapture (in-conduit hydropower, co-generation), and distributed energy storage systems, in addition to solar generation and battery storage. • Pursue DERs as net energy metering (NEM) aggregates or microgrid models at City facilities that feature a cluster of City buildings identified in the *City of Irvine DER Implementation Plan*.	- New construction of select building types (grocery stores, high-rise multifamily buildings, offices, financial institutions, retail stores, schools, warehouses, auditoriums, conventions centers, hotels, motels, medical offices, restaurants, and theaters) are expected to have PV and storage. - Single-family homes capable of adding battery storage to the existing solar system - Incentives to eliminate natural gas from new buildings.
Energy Education and Awareness	BE-4.1	Strengthen community awareness of energy efficiency, energy conservation, electrification, and clean energy.	Not quantified separately		• Develop and implement a comprehensive energy efficiency, energy conservation, electrification, and clean energy outreach and education campaign to support emissions reductions from building energy use, such as *Solarize Irvine* efforts to provide information on the California Solar Rights Act, especially for Homeowner's Associations (HOAs). • Encourage the installation of battery storage in conjunction with renewable energy generation projects within new and existing buildings through engagement campaigns and state incentives. • City facilities to focus on the highest energy-consuming buildings identified in the *City of Irvine DER Implementation Plan as an example of clean energy leadership to the community* • Leverage the Green Business network to increase awareness of energy efficiency examples and resources, and provide information on clean energy incentives.	

Transportation and Land Use

Strategy	Measure Code	Measure	GHG Reductions ($MTCO_2e$)		Key Actions	Examples/Notes
			2030	2045		
Sustainable Transportation and Land Use Planning	TR-1.1	Increase high-density, transit-oriented development along primary corridors to reduce time spent traveling.	444	1,694	• Promote the increase of density and mixed uses in key opportunity areas pursuant to the City's adopted Housing Element, and/or forthcoming General Plan Update, such as Irvine Spectrum and Irvine Business Complex. • Encourage development of urban plazas in new development to foster pedestrian activity and vibrant mixed-use centers that reduce vehicular activity. • Support high levels of ridership at the Irvine Station by encouraging higher density (through a residential overlay pursuant to adopted Housing Element and/or forthcoming General Plan Update), mixed uses, and connectivity along transit corridors and at transit nodes. • Update the City's inclusionary zoning ordinance to mandate 20 percent of new market-rate housing units to be deed restricted for a minimum of 55-years as affordable to households at very-low, low- and moderate income levels. • Introduce residential uses in targeted retail centers to create mixed-use environments (pursuant to adopted Housing Element and/or forthcoming General Plan Update). • Expand the residential overlay and unit cap in the Irvine Business Complex to promote mixed-use development. • Develop a study to see if other non-residential planning areas could be considered for mixed-use development in alignment with goals of the Housing Element.	• Housing Element
	TR-1.2	Create car-free areas to reduce vehicle use and promote pedestrian use.	Not quantified separately	Not quantified separately	• Build upon Irvine's successful examples of pedestrian- and bike-friendly connections, and expand to other areas in the City, such as Quail Hills trails, Irvine Spectrum, and Irvine Station • Facilitate the installation of pedestrian malls in new development projects. (A pedestrian mall is characterized as a number of blocks of public streets designated for pedestrian-only use and closed to vehicular traffic.) Pedestrian malls are most successful when they are in close proximity to the office/financial core in large cities. • Rescale pedestrian-only streets with wide sidewalks to allow for outdoor dining and a narrower street to allow for easy mobility. • Rezone uses in pedestrian mall to provide ground floor retail and residential/commercial uses on upper floors. • Develop an Operation and Maintenance Plan with City dedicated to overseeing the maintenance and landscaping of any new publicly-owned pedestrian malls. • Seek opportunities to enhance walking, biking, and transit use within a one-mile radius (for walking) and a three-mile radius (for biking). Refer to recommendations in SCAG's Irvine Station First Last Mile Plan. • Provide shuttle/microtransit[1] service or similar options to reduce vehicular and parking demand for surrounding streets and neighborhoods, with a focus on higher-density neighborhoods.	• Pedestrian Mall examples • https://records.cityofirvine.org/OnBaseAgendaOnlineTC/Documents/ViewDocument/ATTACHMENT 1 - 2021 IRVINE FIRST LAST MILE PLAN.PDF.pdf?meetingId=3200&documentType=Agenda&itemId=105078&publishId=33947&isSection=falseIrvine Station First Last Mile Plan
Low- and Zero-Emission Vehicles	TR-2.1	Increase electric vehicle (EV) charging infrastructure.	153,812	717,770	• Support installation of EV charging infrastructure on City property and throughout the community consistent with the funding amounts and number and types of chargers recommended in the *City of Irvine Zero-Emission Vehicles Transition Plan*. • Ensure EV charging stations are encouraged and allowed through land use designations that currently permit gas fueling stations. • Install EV charging stations and preferred parking for EVs at public facilities, parks, and other high-use parking areas throughout the City; provide incentives that lead to installation on private property. • Provide guidelines for the permit application process for EV charging infrastructure installation in residential and nonresidential development.	• ZEV Plan CALGreen requires new warehouses, grocery stores, and retail stores of any size to provide medium- and heavy-duty vehicle EV-ready stalls. Reach code to require installation of EV chargers.

[1] Microtransit aims to offer shorter wait times and improved reliability compared to the bus and rail system to further incentivize alternative transportation modes that are less emissions-intensive than private vehicle trips. On-demand rides can be booked using smartphone applications or call centers. Microtransit could be operated by the local transit operator, a private contractor, or directly by the City.

					• Require all nonresidential development to comply with CALGreen and AQMD Rule 2305 to electrify medium and heavy duty parking stalls, loading docks, and activities related to warehouse operations. • Designate certain curbside locations as commercial loading zones exclusively available for zero-emission commercial delivery vehicles. Locations should be prioritized based on land use density and existing exposure from air pollution. • Implement load management strategies for EV charging at City facilities to lower utility bills and minimize electrical infrastructure upgrades, including shared charging, scheduled charging, and fleet management software, as recommended in the *DER Implementation Plan.* • Implement accessible hydrogen fuel cell fueling infrastructure in the city as hydrogen vehicles become commercially available.	AQMD Rule 2305 requires warehouses to reduce trucking emissions and adopt clean technologies, or pay a mitigation fee. Rule 2305 established a program for warehouses with more than 100,000 square feet of warehouse space to take action to electrify activities and reduce air pollutants.
	TR-2.2	Increase EV and low-carbon vehicle adoption through incentives and awareness of existing federal, state, and regional incentives/tax credits.			• Implement the *ZEV Transition Plan* recommendation to create a ZEV Vehicle Replacement Policy in which City fleet vehicles are replaced with zero emission technology vehicles at levels above and beyond the requirements of State regulation. • Promote awareness of local, regional, and State incentives for low- and zero-emission vehicles, such as those provided by SCE and SCAQMD. • Support the development of a regional EV collaborative, led by OCPA, or other regional partner to share lessons learned and best practices, and track metrics. • Promote SCE's pre-owned electric vehicle rebate program and Charge Ready Program which assists business and property owners with deploying the infrastructure and equipment necessary to support EV charging stations at their locations. • Promote South Coast Air Quality Management District's (SCAQMD's) residential EV charging incentive program to offset Level 2 EV charger hardware costs. • Promote SCAQMD's Replace Your Ride program that incentivizes replacement of older vehicles with a newer vehicle, upgrade to a hybrid or electric vehicle, or vouchers for car-sharing or public transit passes.	
	TR-2.3	Support EVs in new development by increasing the number of chargers required.			• Adopt an EV charging reach code on or before 2026 to increase levels of EV readiness in new residential and nonresidential development beyond the minimum mandatory levels established in CALGreen.	• Corte Madera CA • Dublin CA • Fairfax CA • Glendale CA
	TR-2.4	Reduce the use of fossil fuel-powered vehicles.	Not quantified separately	Not quantified separately	• Implement the *City of Irvine Zero Emission Vehicles Transition Plan* to increase adoption of ZEV technologies in the city, including the installation of chargers on City property identified as high priority in the *ZEV Transition Plan*.	• ZEV Plan
Transit System Improvement	TR-3.1	Enhance and expand transit facilities and infrastructure to access a broader ridership.	62,461	102,067	• Partner with Amtrak, Metrolink, and Orange County Transportation Authority (OCTA) to expand the Irvine Station with ridership upgrades and broader connectivity with farther lying areas of the City. • Work with OCTA to expand *i*Shuttle service to provide first and last mile services for residents of Irvine. • Work with OCTA to expand on-demand service to underserved areas of the City. • Create a circulator shuttle service that provides bi-directional frequent, free or low-cost connections between the Irvine Station, other stations, rideshare lots, and key city destinations and the airport as a supplement to OCTA bus service. • Evaluate the feasibility of developing a light rail system that connects Irvine residents to key employment, retail, and educational destinations. Evaluate the feasibility of developing a light rail system that connects Irvine residents to key employment, retail, and educational destinations. • Collaborate with regional transit providers to increase shading and heat-mitigating materials at transit stops. • Improve transit access and safety through sidewalk/crosswalk safety enhancements, bus shelter improvements, improved lighting, and other features. Work with the community to determine barriers to use, most desired improvements, and other access challenges.	• BlueLA Carshare • Good2Go • Zipcar Note: Alternate modes of transit are needed in the City to reduce parking demands in retail and housing areas; Service in key areas can cover most of the population. These measures will be costly and challenging to achieve, requiring either autonomy as a transportation agency or close coordination with regional transit agencies.

					• Provide real-time bus/train arrival time, travel time, alternative routings, or other transit information via electronic message signs, dedicated monitor or interactive electronic displays, websites, or mobile apps. • Provide short-term and long-term bicycle parking near rail stations, transit stops, and freeway access points near commuter or rapid bus lines. • Implement an electric carshare program at the Irvine Station to provide zero emissions first mile-last mile travel. • Explore a City Transportation Authority to implement actions listed herein.	
	TR-3.2	Increase transit ridership through incentives and more frequent, connected transit lines.			• Work with OCTA to add or modify existing transit service to increase ridership in Irvine. • Work with OCTA to extend the operation hours of transit to accommodate the commuting times of alternative-shift workers. • Implement transit-supportive treatments on transit routes to incorporate a mix of roadway infrastructure improvements and/or traffic signal modifications that improve transit travel times and reliability. Treatments can include transit signal priority, bus-only signal phases, queue jumps, curb extensions to speed passenger loading, and dedicated bus lanes. • Create incentives, such as fare reductions and convenient routes, to shift travel to transit from single-occupancy vehicles and other traveling modes. • Expand upon first-last mile partnerships between the City/OCTA and a transportation network company (TNC) for subsidized, shared TNC rides to or from the Irvine Station. Consider providing inclusive mechanisms so people without bank accounts, credit cards, or smart phones can access the incentives.	
	TR-3.3	Implement an on-demand microtransit system, transporting residents from curb to curb (e.g., OC Flex or LA County Micro).			• Provide on-demand public transit services that offers flexible routes and on-demand scheduling through coordination with OCTA or a private entity. Microtransit aims to offer shorter wait times and improved reliability compared to the bus and rail system to further incentivize alternative transportation modes. • Partner with a third-party to develop on-demand public transit services offering user-friendly smartphone applications for booking on-demand rides. • Consider deployment of ZEV shuttles to provide on-demand service.	• OC Flex • Metro Micro • San Joaquin RTD Van Go! • TransLoc
Active Transportation	TR-4.1	Develop more protected bikeways.	47,541	47,109	• Implement specific recommendations for improving pedestrian infrastructure and development of future facilities included in the *City of Irvine Strategic Active Transportation Plan*. • Implement bicycle and pedestrian trail network improvements to close gaps and improve connection with the regional trail network.	• SATP • IBC Connects
	TR-4.2	Expand bicycling and walking options through infrastructure improvements.			• Implement sidewalk improvements, high-visibility crosswalks, crossing improvements, and corridor improvements as specified in the *City of Irvine Strategic Active Transportation Plan and Local Roadway Safety Plan*. • Continue ongoing work with Irvine Unified School District to build on its local Suggested Routes to School program to create safe, convenient, and fun opportunities for children to bicycle and walk to and from schools. • Create a wayfinding program to guide people who walk and bike through safe and improved routes to major destinations. • Adopt a Walkability Plan and/or Pedestrian Design Guidelines that seek to improve street lighting, safer crosswalks, ADA compliance, and signage. • Consider requirements for bicycle parking upgrades at existing commercial centers (specifically adding bike racks to accommodate e-bikes.	• SATP • Bridge Prioritization Study
	TR-4.3	Develop more accessible and safer pedestrian infrastructure.			See TR-4.2	

	TR-4.4	Implement a community bikeshare program.			• Build upon previous efforts to implement a docked bikeshare program that provides users with on-demand access to bikes for short-term rentals. • Consider implementation of a docked electric bikeshare program that provides users with on-demand access to electric pedal assist bikes for short-term rentals.	
Transportation Demand Management	TR-5.1	Reduce vehicle miles traveled (VMT) from local businesses through employee rideshare and transit incentive services such as Spectrumotiom.	Not quantified separately	Not quantified separately	• Encourage and incentivize large employers in the City to implement mandatory commute trip reduction (CTR) program, above and beyond AQMD's requirements. The CTR program can include commute trip reduction marketing, ridesharing provisions, subsidized or discounted transit passes, end-of-trip bicycle facilities, employer-sponsored vanpool, plus include mandatory trip reduction requirements (including penalties for non-compliance) and regular monitoring and reporting of these program components. • Consider incentives for large employers in the City to offer employee parking cash-out. Cash-out is when employers provide employees with a choice of forgoing their current subsidized/free parking for a cash payment equivalent to or greater than the cost of the parking space.	• Berkeley CA • Richmond CA • Bay Area Commuter Benefits Program Note: AQMD requires employers with 250 employees or more to have trip reduction plans; Spectrumotion supports the businesses in Irvine Spectrum area; and OCTA provides training to employers for ridesharing program.
	TR-5.2	Increase implementation of transportation demand management (TDM) strategies such as high-occupancy vehicle (HOV) lanes or reduced transit fares for students to reduce vehicle emissions.			See TR-3.1 through TR-3.3	
Vehicle Idling	TR-6.1	Reduce vehicle idling through education and adoption of EVs and plug-in hybrid electric vehicles (PHEV).	Not quantified separately	Not quantified separately	See TR-2.1 through TR-2.4	
Parking	TR-7.1	Reduce the amount of parking such that it meets the needs of residents, workers, and visitors in a way that is consistent with the City's	Not quantified separately	Not quantified separately	• Explore requiring new developments to unbundle (offer the option to separately purchase parking), a residential project's parking costs from property costs, requiring those who wish to purchase parking spaces to do so at an additional cost. • Assess the feasibility on pricing on-street parking in the City, with a focus on parking near Irvine Spectrum, Irvine Business Complex and other central business districts, employment centers, and retail centers. • Review options to update City parking standards where feasible options to driving personal vehicles are available. • Amend Zoning Ordinance to increase bicycle parking requirements.	• Berkeley CA Note: Adjusting parking standards will be challenging to achieve without adequate alternative transportation options. Zoning Ordinance only requires designated bicycle parking for a few types of uses.

		sustainability goals.				
	TR-7.2	Implement fees for parking in high-traffic areas.			See TR-7.1	

Off-Road Vehicles and Equipment

Strategy	Measure Code	Measure	GHG Reductions ($MTCO_2e$)		Key Actions	Examples/Notes
			2030	2045		
Electrification and Clean Alternatives	OR-1.1	Reduce emissions from landscaping equipment such as leaf blowers by supporting a transition to electric equipment.	96	435	• Adopt an ordinance to require business owners (including landscaping businesses) to convert or replace their gasoline-powered gardening equipment, such as lawn mowers, leaf blowers, and hedge trimmers, with electric equipment. • Incentivize developers to install sufficient exterior electrical outlets to assist with charging electric-powered landscaping equipment. • Research incentives for landscapers to purchase additional batteries and facilitate conversion to all-electric equipment. • Promote SCAQMD's residential Electric Lawn Mower Rebate Program which provides incentives to replace gas-powered landscape equipment with an electric alternative. • Promote SCAQMD's Commercial Electric Lawn and Garden Equipment Incentive & Exchange Program available to commercial landscapers and gardeners and local governments, school districts, colleges and non-profits. Through this program, commercial lawn and garden equipment is made available at a discounted price through pre-authorized dealerships. Equipment available through this program includes handheld trimmers, chainsaws, pruners, backpack and handheld blowers and ride-on, stand-on, walk-behind and robotic lawn mowers. An equivalent operable gasoline or diesel-powered piece of lawn or garden equipment must be scrapped when the new battery-electric equipment is purchased.	• Westlake Village CA • Menlo Park CA
	OR-1.2	Reduce emissions from construction equipment by supporting a transition to electric equipment.	1,748	6,630	• Require all construction projects starting in 2024 to consider decarbonizing fuels and require the use of Tier 4 construction equipment. • Encourage the use of electric-powered construction equipment in all discretionary projects. • Prohibit the use of fossil fuel-powered generators at construction sites in all discretionary projects.	Note: Inspectors will need training to verify the proper equipment is being used in the field.

Solid Waste

Strategy	Measure Code	Measure	GHG Reductions ($MTCO_2e$)		Key Actions	Examples/Notes
			2030	2045		
Zero Waste	SW-1.1	Eliminate the disposal of organic solid waste in landfills to reduce methane emissions.	111,388	159,293	• Implement and enforce the requirements of Senate Bill 1383 and eliminate disposal of compostable organic materials to landfills. • Coordinate with waste hauler to expand existing organic waste collection routes and drop-off sites to improve composting services for interested residents and businesses. • Seek partnerships with schools to develop school composting programs and education. • Partner or contract with local food recovery organizations (e.g., Abound Food Care, Bracken's Kitchen, Food Finders, South County Outreach) to redistribute food waste to disadvantaged communities.	
	SW-1.2	Increase recycling and the diversion of other inorganic			• Adopt an ordinance that requires recycling and composting services, the use of only recyclable and compostable materials by vendors, and adequate staff to ensure proper disposal and recycling at events that require a city-issued permit.	

		solid waste through the expansion of public recycling bins.			• Partner with waste haulers to expand the diversion of non-food, non-construction, and non-demolition solid waste. • Continue to increase participation in, while simultaneously reducing contamination of, curbside and drop-off recycling programs for all residential, commercial, industrial, and institutional uses. Identify new drop-off opportunities and additional items that can be recycled curbside. • Provide education, audits, and other technical assistance to increase waste diversion rates. Develop waste reduction and diversion behavior campaigns in partnership with local organizations for residential, multifamily property managers, and commercial sectors.	

	SW-1.3	Reduce the generation of waste from residents and businesses through waste-reduction measures such as single-use plastic restrictions and bans.			• Adopt an ordinance banning the use of polystyrene foam and single-use plastics with the following provisions:
					  ○ Prohibit sale and distribution of polystyrene foam containers
					  ○ All polystyrene foam products are prohibited from City facilities (including parks)
					• Enhance education and enforcement of AB 1276 that requires provision of single use plastic (and bio-plastic) straws, utensils, and condiment packets only upon the request of the customer.	

	SW-1.4	Reduce the generation of construction and demolition waste.			• Adopt a comprehensive construction and demolition ordinance to reach a 75 percent diversion rate by 2030.	
	SW-1.5	Facilitate repair and reuse of consumer products.			• Evaluate the feasibility of creating a reuse facility that makes building materials available to customers and acts as an outlet for reusable items otherwise destined for the landfill. • Create and support or enter into contracts with third parties to provide “fix-it clinics” at Parks and Facilities and other city facilities that can build skills among local businesses and residents in innovation, repair, and reuse.	
Landfill Emissions	SW-2.1	Dispose waste at innovative facilities.			See SW-1.5	
	SW-2.2	Support waste-to-energy facilities that turn trash into fuel.			• Work with Orange County Waste & Recycling to evaluate feasibility of organic waste-to-energy production at local landfills. • Work with Orange County Waste & Recycling to evaluate feasibility of hydrogen generation from organic waste at local landfills. • Establish a local facility (in partnership with OC Sanitation District, OC Waste & Recycling, or others) that can process organic waste local to Irvine.	• Ways2H • Lancaster CA Current commercial and multi-family organic waste is going to a facility in Rialto which has energy generation capabilities
	SW-3.1	Engage with waste-related policy making.			• Track State legislation regarding solid waste and advocate for actions that reduce emissions from this sector.	

Water and Wastewater

Strategy	Measure Code	Measure	GHG Reductions ($MTCO_2e$) 2030	GHG Reductions ($MTCO_2e$) 2045	Key Actions	Examples/Notes
Water Conservation	W-1.1	Reduce water consumption in buildings through conservation campaigns and water efficiency measures.	488	–	• Promote water conservation incentives such as appliance and plumbing rebates and water conservation kits in partnership with Irvine Ranch Water District and other local partners. • Facilitate and respond to reports of water waste and violations of local water use restrictions. • Encourage ultra-low-flow fixtures in new development to reduce water consumption. • Consider establishing ultra-low-flow water fixture retrofit-upon-sale requirements for residential and nonresidential buildings. • Adopt a Building Performance Standard that requires owners of multi-family, commercial and industrial buildings 20,000 square feet and larger to benchmark their water consumption and perform audits and building upgrades for low-performing buildings. • Require benchmarked buildings to display their water scores label in a conspicuous location near each public entrance.	• EPA Water Score Note: City will coordinate with partner agencies and stakeholders on reporting benefits and requirements, and challenges with point-of-sale implementation to align with BE-1.2.
	W-1.2	Reduce water consumption for irrigation and landscaping by encouraging drought tolerant landscaping practices.			• Require drought-tolerant, water-conserving, and/or native landscaping in new development and redevelopment projects (low-water use landscaping for areas served with recycled water). • Continue to promote landscape water conservation incentives in partnership with Irvine Ranch Water District and through the Cool Irvine program. • Continue efforts to reduce consumption of water, electricity, and fossil fuels in the construction, operations and maintenance of parks and recreation facilities where possible through use of low-water use landscaping, water conservation technology, and continued use of recycled water. • Install low-water use landscaping that is adapted to recycled water in the public right of way and City-owned buildings and facilities.	• 97% of City landscaping is on recycled water service.
Recycled Water	W-2.1	Increase the use of recycled water.	–	–	• Collaborate with IRWD on drought-ready policies to explore greywater readiness in new residential construction and alterations. • Encourage the use of onsite rainwater harvesting and recycled water systems, consistent with applicable environmental, health, and safety regulations and requirements. • Encourage the use of rainwater capture and onsite recycled water for landscaping use. • Implement IRWD's requirements for dual-plumbed systems in new nonresidential development.	• Model ordinance • Dual-plumbed systems • Hyatt House example Greywater readiness refers to having accessibility points (stub-outs, access points, dual plumbing, or pass-through plumbing included so that the greywater drains are accessible and able to be diverted into a greywater irrigation system. IRWD's water supply is promoted as drought-proof

Miscellaneous						
Strategy	Measure Code	Measure	GHG Reductions ($MTCO_2e$)		Key Actions	
			2030	2045		
Urban Forestry and Open Space	MS-1.1	Protect and enhance native trees and vegetation.	1,376	4,817	• Create an Urban Forest Management Plan, including a tree inventory and maintenance plan. Assess the current composition and distribution of the city's trees and include information about tree characteristics, maintenance history, and management needs. Assess community needs for new trees for an enhanced urban tree canopy to ensure adequate shade and air pollution buffers. • Amend the zoning code to create tree planting standards for new and renovated development; require the planting of two trees in single-family development in the front, side, or rear yard as feasible; and create lineal landscaping standards for commercial development that identify a minimum number of tree plantings based on lineal frontage length. • Develop a free residential yard tree program that prioritizes homes in disadvantaged communities. • Establish and implement a residential tree planting and replacement program for single-family homeowners. • Use tools such as CalEnviroScreen to determine priority pollution-burdened areas of the city that may benefit most from vegetative barriers and plant drought-tolerant vegetative barriers in these areas. • Partner with hotel industry and Chamber of Commerce to promote destination stewardship program to support tree planting through hotel fees. (San Luis Obispo "Keys for Trees" program).	Note: Zoning Ordinance includes requirements for trees in parking lots.
	MS-1.2	Expand and protect city parks and open spaces.	Not quantified separately	Not quantified separately	• Require that the site planning, construction, and maintenance of new development preserve existing healthy trees and native vegetation on site to the maximum extent feasible. Replace trees and vegetation not able to be saved. • Promote connectedness between communities and parks by improving transition points. • Provide more shade in local parks through planting and maintenance of trees. • Revitalize and invest in parks near underserved/disadvantaged communities. • Support the creation of community gardens on public and private lands by community groups by amending the zoning code to allow for urban agricultural uses.	
Urban Heat Island Reduction	MS-2.1	Reduce the urban heat island effect with urban forestry, shade structures, cool pavements, and cool roofs to conserve energy.	Not quantified separately	Not quantified separately	• Explore options for new development to use high-albedo materials for walls, surfaces, driveways, parking lots, walkways, patios, and roofs. • Explore City street slurry projects use of heat reflecting materials and encourage similar uses at city parks/parking lots, schools, etc.	Note: Explore Cool Street programs in Los Angeles and Phoenix. Pacoima CA
Green Infrastructure	MS-3.1	Increase the use of green infrastructure.	Not quantified separately	Not quantified separately	• Identify funding opportunities to support and implement a green infrastructure program to improve stormwater management, support biodiversity, reduce air pollution exposure, and increase access to natural spaces. • Develop permitting guidelines and best practices for green and vegetative roofs. • Support the use of green roofs to reduce runoff flow rates and volume, absorb and filter pollutants, supply green habitat and nesting areas, and help lower the urban heat island effect. • Fund and implement a green infrastructure program for the installation and maintenance of projects and existing civic resources such as the parks system and public spaces, to improve stormwater management, support biodiversity, reduce air pollution exposure, and increase access to natural spaces, including trees.	
Green Business & Jobs	MS-4.1	Incentivize and promote eco-friendly operations, habits, and business practices through programs	Not quantified separately	Not quantified separately	• Partner with local educational institutions and private sector partners to coordinate the planning and development of a technology park to serve as a focal point for clean technologies such as mobility innovation, renewable energy development, and carbon management.	

		such as the Green Business Program.			• Support the development and deployment of carbon capture and storage technologies in industrial uses throughout the city. • Expand certification and recognition of green businesses in Irvine, and continue sharing of resources and State rebates.	
	MS-4.2	Support the creation of green jobs and businesses in the City.	Not quantified separately	Not quantified separately	• Support local educational institutions in providing and expanding sustainability entrepreneurship training to include emerging clean technologies. • Work with local partners to create an in-person and on-demand energy workforce training program. • Partner with SoCalREN and regional energy agencies to support contractor training and resident education on electric appliances and their installation and maintenance. • Continue implementation of The Innovation Council's Strategic & Action plan for attracting, retaining, and supporting high-growth technology businesses to help position Irvine as a regional hub of innovation and technology. • Attract green industries through tax incentives, low-cost loan and grant programs, and regulatory guidance.	• Octane
Carbon Sequestration and Embodied Emissions	MS-5.1	Increase soil carbon content to mitigate greenhouse gases and increase climate resiliency.	Not quantified separately	Not quantified separately	• Promote awareness of the State's Healthy Soils Initiative and tips for local residents and businesses to increase soil carbon content. • Continue partnership with UCI climate grant application to develop a tool kit for residents and agencies with carbon sequestration, wildfire, and other nature-based solutions. • Continue the City's existing use of a "soil health first" approach to landscaping on City property.	• UCI Loma Ridge
	MS-5.2	Use low-carbon and carbon sequestering construction materials in new development.	Not quantified separately	Not quantified separately	• Explore requirement that new residential and nonresidential construction use low-carbon concrete, steel, and other key impact materials, in coordination with the framework for measuring and reducing the average carbon intensity of materials used in construction of new buildings to be prepared by the California Air Resources Board pursuant to AB 2446 (2022).	