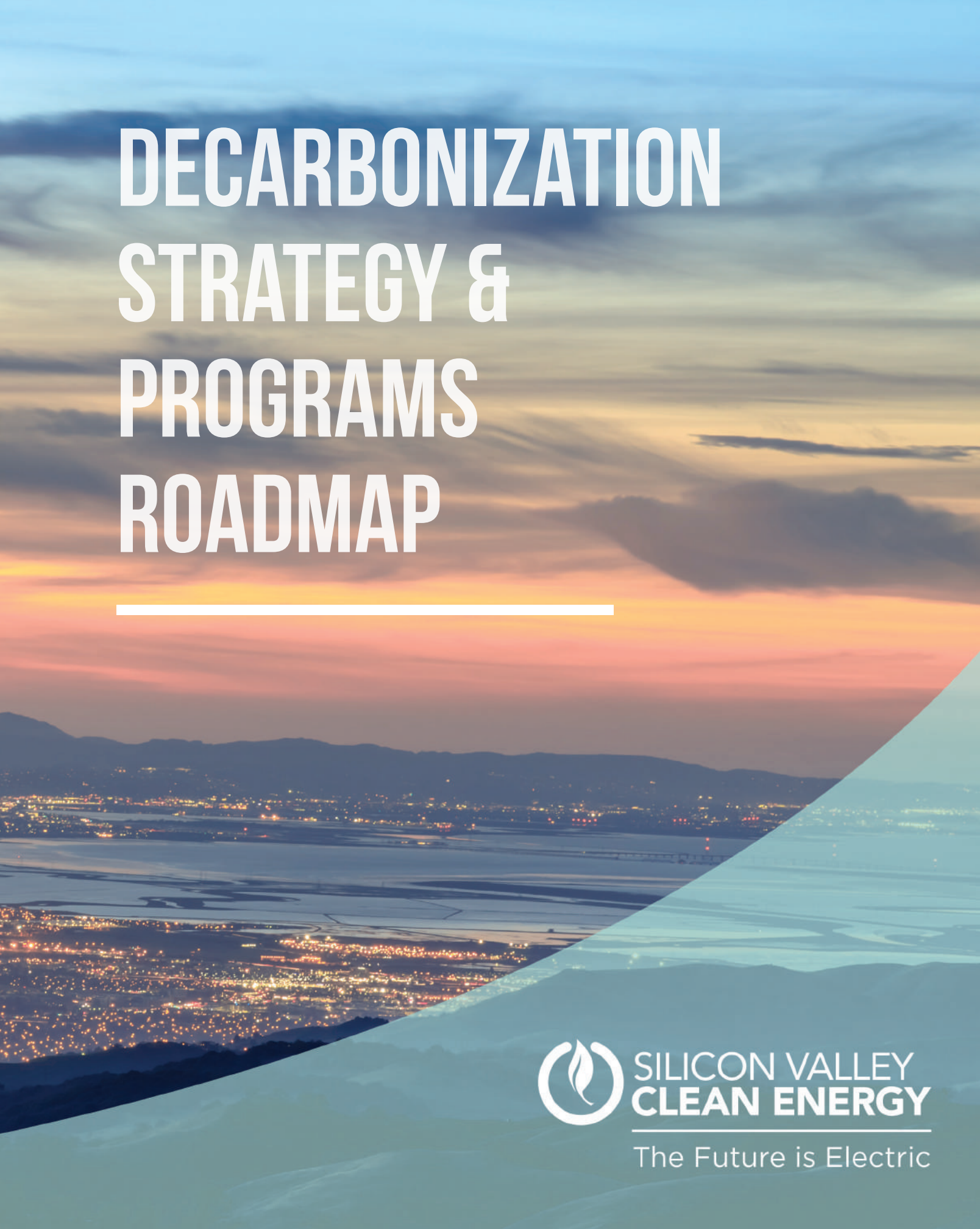
DECARBONIZATION STRATEGY & PROGRAMS ROADMAP



SILICON VALLEY CLEAN ENERGY

The Future is Electric

SILICON VALLEY CLEAN ENERGY

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CEO MESSAGE

Silicon Valley Clean Energy was founded by the community for our communities. Many local advocates and leaders put in years of hard work to form this organization in order to reduce greenhouse gas emissions. In addition to carbon-free electricity, the added benefits of community choice have given customers local and transparent decision making, a choice for their power provider and saved millions of dollars, which will be reinvested in our region through programs to further reduce emissions. Programs represent the next stage in our maturity and is the mechanism by which we further engage our communities to achieve the ambitious carbon reduction goals we've set.

This Decarbonization Roadmap is the result of months of collaboration by many stakeholders who I would like to thank on behalf of our Board and staff. Without the input of our community, large and small customers, industry stakeholders, member agency staff and Board, we would not have been able to develop such a comprehensive strategy.

The work of our first year of operations was to provide all our customers with carbon-free electricity. We're proud of our accomplishments to date, such as the three long-term contracts we have signed for new renewable energy projects. Two of these projects are the largest solar-plus-storage projects in California and we will continue to invest in long-term renewable power projects. These projects will add new benefits to our grid and create new jobs. The decarbonization programs have these same benefits.

MISSION STATEMENT:

Reduce dependence on fossil fuels by providing carbon free, affordable and reliable electricity and innovative programs for the SVCE community.

The decarbonization roadmap expands our scope from providing clean electricity, to influence emission reductions from buildings and transportation. This is the imperative challenge of our time. Our community and our Board are engaged in having SVCE play a vital role in this decades-long endeavor. We will leverage technology, prioritize innovation and use data science to manage and influence carbon-free energy use. We will embody the spirit of the community we live and work in, the spirit of Silicon Valley, to bend the carbon curve downwards.

You will find this presentation of the roadmap set among beautiful images from throughout our county. While the strategies presented in this roadmap are the key focus, we wanted to present the information in a way to remind us all why we have set forth on this journey to cut carbon emissions. The images are a reminder that we are working to protect our home for the people and places we know and love.

Girish Balachandran

Girish Balachandran, CEO

2. OUR PATH

BIKE TO THE FUTURE
ELECTRIC BIKE BUILDING SCHOLARSHIP COMPETITION
Saturday, May 5
9 a.m. - 1 p.m. at Gilroy Gardens
Gilroy Gardens
WALK & ROLL
SILICON VALLEY CLEAN ENERGY
SILICON VALLEY CLEAN ENERGY

COMMUNITIES & BOARD MEMBERS

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Vice Chair
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Steve Tate
City of Morgan Hill

Howard Miller
City of Saratoga

Nancy Smith
City of Sunnyvale

Dave Cortese
Santa Clara County

ACHIEVEMENTS

The programs roadmap is the next chapter for Silicon Valley Clean Energy.

Step one was making sure we got the cleanest energy possible. Clean electricity from SVCE's carbon-free sources has contributed to a dramatic **21%** reduction in area-wide carbon emissions from energy use compared to 2015 levels.

We are also reinvesting in new renewable energy projects. In 2018 SVCE entered into three long-term power agreements, partnering with our neighboring Community Choice Energy agency, Monterey Bay Community Power, for the joint-procurements.

- The **200 MW** Duran Mesa Wind project, developed by Pattern Development, will be built in New Mexico and is a 15-year agreement, expected to reach commercial operation in late-2020. The project's location will complement California's abundant supply of mid-day solar energy, delivering clean wind power during hours of peak demand in the early evening.
- The RE Slate 1 project, developed by Recurrent, will be built in Kings County and is a 15-year agreement which includes **150 MW** of solar capacity and **45 MW/180 MWh** of storage.
- The BigBeau Solar project, developed by EDF Renewables North America, will be built in Kern County and is a 20-year agreement which includes **128 MW** of solar capacity and **40 MW/160 MWh** of storage.

The three projects combined are expected to create **1,440** jobs during construction.

Now that we have secured and are building new clean energy supplies, the Decarbonization Roadmap will tackle emissions in the buildings and transportation sectors, and make sure we're using electricity at optimal times.

"Through the Customer Program Advisory Group, the Silicon Valley Clean Energy board gave selected representatives of residential customers from our communities an opportunity to develop our contribution to the goals and elements of the decarbonization roadmap. The committee implemented its own ideation process over the past year and we're pleased to see our themes of customer empowerment, cost savings, GHG reduction, and demand and supply alignment in the roadmap."

- Peter Evans, Customer Program Advisory Group Chair

FALL STAKEHOLDER WORKSHOP

Stakeholder and Community Input

The roadmap is informed by a multi-stakeholder engagement process, which included community members participating in the Customer Program Advisory Group (CPAG), commercial and industrial customers (C&I), staff from member jurisdictions through the Member Agency Working Group (MAWG), and industry experts through a facilitated workshop.

2018

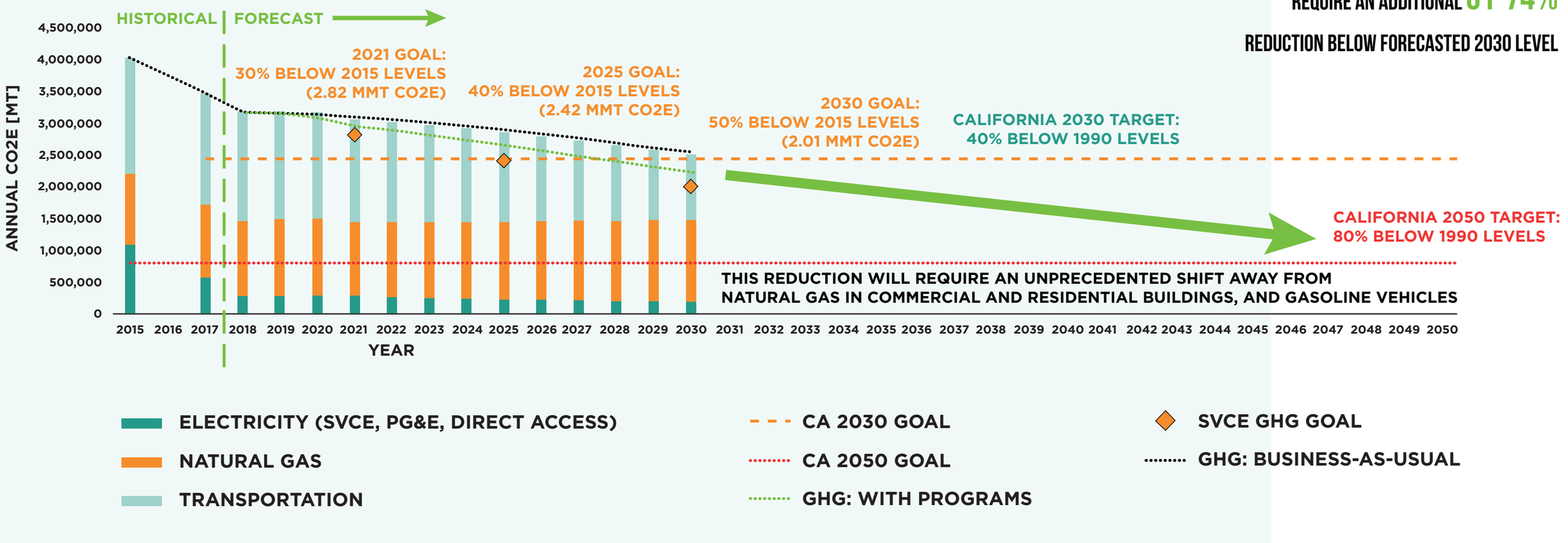
3. THE GOALS

Reduce greenhouse gas

emissions from 2015 baseline levels 30% by 2021, 40% by 2025 and 50% by 2030

GHG Reduction Goals

Staff carried out a GHG emissions forecasting and scenario analysis in SVCE service territory through 2030 from energy-related emissions (i.e. electricity, natural gas and transportation). The objectives were two-fold: 1) inform the development of GHG emissions targets beyond SVCE's current 2021 target, and 2) assess the potential impact of the proposed program portfolio to guide the Roadmap development.



ACHIEVING CA'S 2050 GHG GOAL WILL REQUIRE AN ADDITIONAL 61-74% REDUCTION BELOW FORECASTED 2030 LEVEL

4. STRATEGIC FRAMEWORK

In addition to the overarching greenhouse gas emissions reduction goals and decarbonization strategies, the following, three-part strategic framework was developed through the stakeholder engagement process and used to guide development of the Decarbonization Strategy and Programs Roadmap

WHAT WILL WE DO?

Retail Products & Services

- Develop and support innovative new products and services to meet customer needs and decarbonize

Education & Outreach

- Increase public awareness and education on electrification and actions to reduce emissions

Market Transformation

- Catalyze market transformation through coalitions and partnerships with actors in industry and the innovation ecosystem

Public Policy

- Expand state and local policy activity on decarbonization, while strengthening local and regional agency coordination

HOW WILL WE LEVERAGE?

Innovation:

- Harness innovation to continuously improve service to our customers and community, and to accelerate “bending the carbon curve”

Data:

- Unlock the tremendous value of utility and other data to guide development, implementation, measurement and evaluation of all program activities

Partnerships

- Form and leverage partnerships to support activities addressing our decarbonization mission

WHICH PRIORITIES WILL GUIDE US?

Customer & Community Value:

- Deliver value to our customers and larger community through program offerings and ongoing initiatives

Core Role for SVCE:

- Recognize activities where we can and must play a key role given our unique position of community-owned electricity provider

Equity in Service:

- Balance activities to reflect the diversity of our customer base and geography

Emissions Impact:

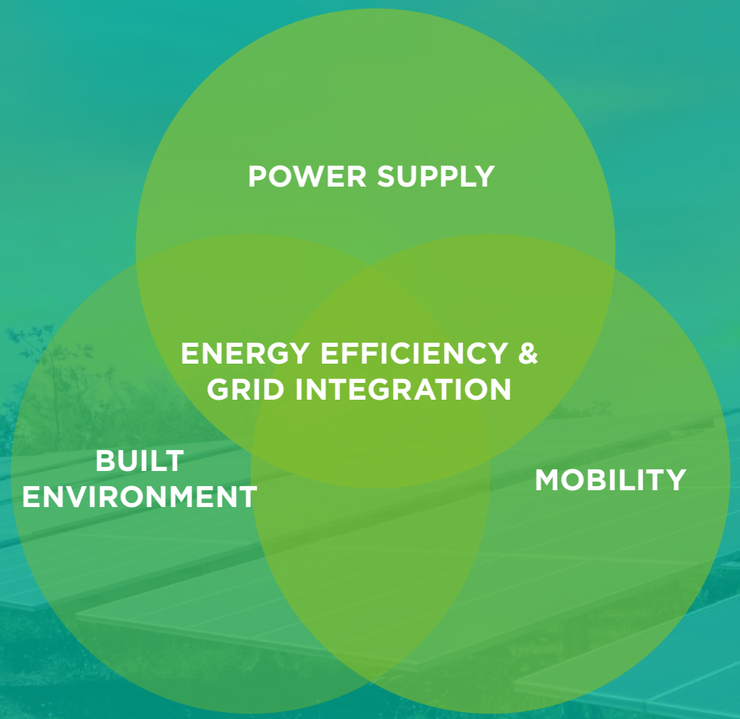
- Prioritize activities with greatest emissions reduction potential to achieve alignment with our mission

Scalable and Transferable:

- Pursue solutions that can be expanded and adapted by others, to ensure impact both within and beyond our borders

5. DECARBONIZATION STRATEGY

SVCE is guided by the following overarching strategy to achieve deep decarbonization



- Procure & maintain a sustainable, affordable and carbon-free **power supply**
- Electrify the **built environment** and **mobility**
- Promote **energy efficiency** & successful **grid integration**

10 STRATEGIES TO DECARBONIZE

SVCE will pursue the following specific strategies, organized by sector or cross-sector initiatives

1 Achieve a sustainable, affordable and carbon-free power supply. (Power Supply)

- Seek Board input for an updated, comprehensive integrated resource plan evaluating key policy options (RPS level versus carbon-free resources, types of RPS resources, diversification of resources, location and price structures, hourly matching of load to carbon-free resources, amount of supply in long-term contracts, local renewables carve-out, distributed energy resources, etc.) and considering all trade-offs
- Research the availability and costs of supply resources sited within SVCE service territory to inform prospective policies and procurement

2 Align our clean power pricing with economic and environmental costs to encourage smart investments that support decarbonization and the grid. (Power Supply)

- Develop new retail rate products (e.g. terms-based, dedicated supply, load-following renewable supply option) for large commercial and industrial customers to be responsive to their unique needs and encourage customer retention
- Carry out a retail rates assessment and develop and execute an implementation plan to address barriers and opportunities in rate design to facilitate electrification and guide smart infrastructure investments. Incorporate the statewide move to default time-of-use rates for residential customers in 2020
- Evaluate and revise policies, price signals and rates for distributed generation – specifically the net energy metering successor program – to ensure consistency with SVCE decarbonization strategy and other organizational objectives

3 Accelerate high-efficiency, all-electric new construction and retrofits. (Built Environment)

- Assess current building stock, appliance technologies, adoption rate of all-electric new construction, and other market trends/barriers to inform all building electrification activities
- Promote education and awareness to encourage adoption of efficient electric technologies as replacements for natural gas appliances in retrofit and new construction
- Provide support to member agencies in their consideration of all-electric building codes
- Expand state policy activity to accelerate statewide baseline building codes toward all-electric, to mitigate barriers for local agencies exercising leadership, and to align other state policies and regulations (e.g. CPUC's "three-prong test") with California's ambitious climate goals
- Develop a program to provide incentives and/or technical and design support for new construction, all-electric showcase projects in the community, including potential decarbonized district energy approaches such as Stanford's energy system design
- Design and launch a program to provide incentives to fuel-switch from natural gas to heat pump water heaters using the BAAQMD grant and SVCE match funds
- Facilitate coordination across member agencies to share best practices, policies, processes, and programs supporting all-electric buildings & promote advancements to the community, developers, and other practitioners operating in the service territory
- Pursue actions with member agencies to decarbonize their own municipal buildings
- Consider opportunities to support schools, community colleges and other educational institutions in their efforts to decarbonize their facilities
- Support workforce development and allied suppliers and providers necessary for the massive fuel switching required for decarbonization, for both retrofit and new construction

4 **Accelerate the electrification and transformation of mobility in our community to reduce emissions and provide other benefits such as reduced congestion. (Mobility)**

- Work with member agencies and all other relevant stakeholders to develop and implement a strategy and plan for community-wide build-out of EV charging infrastructure; including plan to jointly pursue/leverage external funding opportunities (e.g. BAAQMD, California Energy Commission, PG&E)
- Develop one or more EV fast charging pilots (e.g. to support EV use in transportation network company (TNC) operations, to pilot real-time pricing structures, to address "last mile" solutions, and to accelerate adoption of electric autonomous vehicles)
- Study barriers and pursue activities to support EV use by low-income customers
- Study barriers and pursue activities to support EV use for customers living in multi-unit dwellings (MUD)
- Provide support to member agencies and C&I customers in electrifying their vehicle fleets and pursuing other decarbonized mobility solutions (e.g. autonomous electric shuttles as a "last mile" solution, e-bikes, e-scooters)
- Participate in relevant regional, state and national advocacy groups and coalitions to accelerate transportation electrification

5 **Educate the community on the benefits of conservation and energy efficiency. (Energy Efficiency & Grid Integration)**

- Promote energy efficiency programs already available to SVCE customers through PG&E and third-party providers

6 **Promote successful grid integration of existing and newly electrified loads to support high penetration renewables integration. (Energy Efficiency & Grid Integration)**

- Include recommendations and/or requirements for connectivity and control in all SVCE programs that result in newly electrified loads
- Develop a program to monetize and harness the value that distributed energy resource (DER) aggregations (aka "virtual power plants") in SVCE service territory can provide the grid and manage the anticipated load growth resulting from electrification
- Explore opportunities to partner with PG&E and other third parties on activities that leverage DERs to provide additional customer and distribution system value

7 **Educate and engage customers and our community in understanding their overall energy usage, opportunities associated with building and vehicle electrification, and specific actions they can take. (Cross-Sector - Education & Outreach)**

- Develop and launch an SVCE-branded customer resource center to enable engagement and awareness-building, education and action related to vehicle and building electrification
- Partner with local organizations in under-represented customer segments to promote SVCE accomplishments and programs
- Develop engaging content for the customer resource center, social media and other channels to broaden interest in energy and electrification

8 Accelerate innovation needed to achieve SVCE's decarbonization mission. (Cross-Sector - Innovation)

- Identify key strategic partners and enter into MOUs and other types of partnership agreements to efficiently and effectively engage the innovation ecosystem
- Develop a program with standardized agreements, evaluation criteria, and processes to allow SVCE to rapidly and nimbly identify and pursue promising pilot opportunities with external partners
- Engage with universities, national labs, and other research institutions to support relevant academic research
- Evaluate and implement (or replicate) programs leveraging advancements in fintech and innovative business models (e.g. "as a service", potential leverage of SVCE capital) that remove barriers to accessing needed capital, particularly in low-income and disadvantaged communities
- Pursue novel mechanisms to spur innovation, such as aggregating market demand across the service territory and beyond to reduce costs, influence product development and shape the supply chain. (e.g. "golden carrot")
- Establish an open data portal to provide transparency where appropriate to improve the ability for market actors to support SVCE's missions and spur private sector innovation
- Pursue external funding opportunities (e.g. DOE, CEC, BAAQMD) with partners

9 Leverage data-driven, strategic analyses to inform programs and cross-functional activities. (Cross-Sector – Other)

- Establish a viable data analytics platform that integrates disparate data sets (customer usage, weather, wholesale market prices, etc.) and enables efficient, high-impact analysis
- Assess technical, economic and market potential of distributed energy resources and electrification across the service territory to inform program development, load forecasting, long-term planning, and rate design
- Carry out a customer segmentation analysis to better understand the diversity and relevant characteristics of the SVCE customer base to inform targeted program activities

10 Measure and monitor progress toward meeting SVCE's decarbonization goals. (Cross-Sector – Other)

- Carry out an annual GHG emissions and clean energy asset baseline assessment and update the GHG forecasting and scenario analysis
- Evaluate developing sector-specific objectives or targets (e.g. "25% of new construction all-electric by 2020)
- Evaluate how methane leakage should be reflected in SVCE's emissions accounting and decarbonization policies, and propose revised policies, as needed

6. PROGRAMS ROADMAP

The following programs comprise the programs roadmap, organized by sector and cross-sector initiatives

EDUCATION & OUTREACH (EO)
MOBILITY (MO)
INNOVATION (IN)
ENERGY EFFICIENCY & GRID INTEGRATION (GI)
POWER SUPPLY (PS)
BUILT ENVIRONMENT (BE)

Initiatives shown in bold are prioritized in the first tranche of programs for detailed development and launch in 2019

Power Supply (PS)

- **PS1: C&I Clean Power Offerings - Develop, market and sell additional SVCE power offerings to address large C&I customers seeking to buy clean power at competitive rates**
- PS2: Retail Rates Assessment - Carry out comprehensive assessment of retail rates to develop multi-phase plan for improvements and developments of pilot rates
- PS3: Integrated Resource Plan - Develop comprehensive strategy for supply portfolio (e.g. %RPS, short- vs. long-term contracts, local resource carve-out, etc.)
- PS4: Local Renewables - Research the availability and price for local resources, and evaluate costs/benefits of procurement

Built Environment (BE)

- **BE1: Reach Codes - Hire technical consultant to support SVCE and Peninsula Clean Energy member agencies in the development, review, adoption and implementation of reach codes supporting building electrification and EV charging infrastructure**
- **BE2: All-Electric Showcase Grants - Incentivize near-term development of showcase all-electric commercial and residential building projects, including potential decarbonized district energy**
- **BE3: FutureFit Heat Pump Water Heater - Provide rebates to fuel-switch natural gas water heaters to heat pump electric water heaters (BAAQMD grant)**
- BE4: Streamlining Community-Wide Electrification - Survey and review local city policies (codes, permitting, inspection, incentives, etc.) and develop model policies/processes

Initiatives shown in bold are prioritized in the first tranche of programs for detailed development and launch in 2019

Mobility (MO)

- **MO1: EV Charging Infrastructure Strategy and Plan - Develop directional strategy(ies), priorities, and action plan with SVCE member communities to guide ongoing build-out of EVSE infrastructure**
- **MO2: EV Fast Charging Pilot Depots - Build pilot high-volume DC Fast Charge facilities to support commercial/public transit fleets, TNC drivers, MUD and disadvantaged communities residents**
- MO3: EV Incentives for Low Income - Provide rebates for used EVs for low-income qualified customers in collaboration with Peninsula Clean Energy
- MO4: EV Charging for Multi-Unit Dwellings - Provide flexible grant offerings to address market gaps with multi-unit dwelling and small and medium business workplace charging
- MO5: Fleet Electrification - Support member cities and commercial customers in evaluating options to electrify their vehicle fleets

Energy Efficiency & Grid Integration (GI)

- **GI1: Virtual Power Plant - Support "virtual power plants" made up of cloud-based aggregations of customer-sited resources to support grid integration and monetize value from connected, controllable loads**
- GI2: Non-SVCE Programs - Promote existing, non-SVCE led energy programs through the Customer Resource Center and other channels.

Education & Outreach (EO)

- **EO1: Customer Resource Center - Develop customer resource center to enable engagement and awareness-building, education and action related to understanding energy usage, vehicle and building electrification**
- **EO2: Community Engagement Grants - Partner with local organizations in under-reached customer segments to promote SVCE accomplishments and programs**

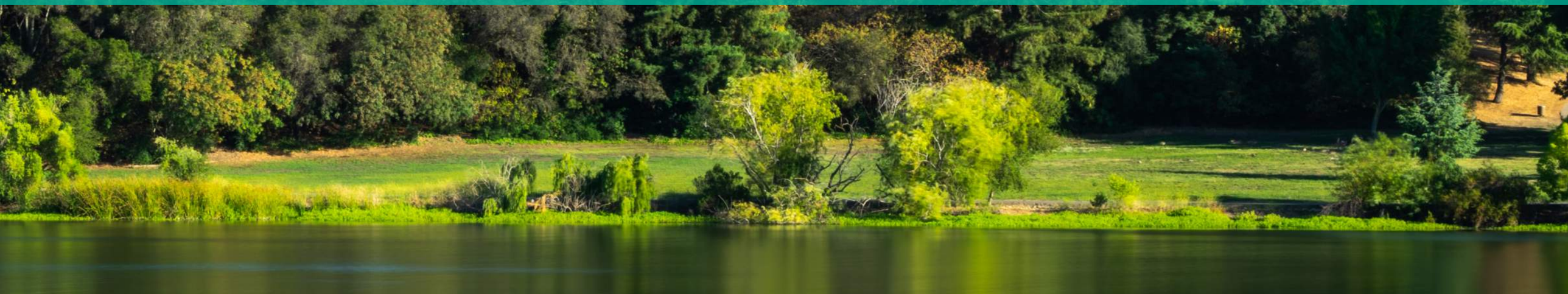
Innovation (IN)

- **IN1: Innovation Partners - Engage with key strategic partners to participate in the local innovation ecosystem to prototype novel program ideas and provide a voice for SVCE customers and the decarbonization mission**
- **IN2: Innovation Onramp - Provide small grants to support innovation through pilot projects with external partners**

7. REPORTING & REVIEW

Updates on Roadmap implementation will be provided on an approximately quarterly basis, coinciding with existing review processes, including the budget cycle and annual strategic plan update.

The Roadmap will be brought forward to stakeholder groups, the Executive Committee, and the Board for a comprehensive review and update on an annual basis, starting in January 2020.



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