



Silicon Valley Clean Energy Executive Committee Meeting

Friday, September 25, 2020
8:30 am

Howard Miller, Chair
City of Saratoga

Nancy Smith, Vice Chair
City of Sunnyvale

Liz Gibbons
City of Campbell

Rod Sinks
City of Cupertino

Fred M. Tovar
City of Gilroy

Neysa Fligor
City of Los Altos

George Tyson
Town of Los Altos Hills

Rob Rennie
Town of Los Gatos

Carmen Montano
City of Milpitas

Javed Ellahie
City of Monte Sereno

Yvonne Martinez Beltran
City of Morgan Hill

Margaret Abe-Koga
City of Mountain View

Susan Ellenberg
County of Santa Clara

Teleconference Meeting

Webinar:

<https://zoom.us/j/98080854105>

Or by Telephone (Audio only):

US: +1 669 900-9128

Webinar ID: 980 8085 4105

This meeting will be conducted in accordance with [State of California Executive Order N-29-20](#), dated March 17, 2020, in consideration of the Coronavirus (COVID-19). All members of the Silicon Valley Clean Energy Executive Committee and staff will participate in this meeting by teleconference.

Members of the public may observe this meeting electronically by accessing the meeting via instructions above. Public Comments can be sent in advance of the meeting to Board Clerk Andrea Pizano at Andrea.Pizano@svcleanenergy.org and will be read within the public comment period or the applicable agenda item. The public will also have an opportunity to provide comments during the meeting.

The public may provide comments on any matter listed on the Agenda. Speakers are customarily limited to 3 minutes each, however, the Committee Chair may increase or decrease the time allotted to each speaker based on the number of speakers, the length of the agenda and the complexity of the subject matter. Speaking time will not be decreased to less than one minute.

If you are an individual with a disability and need a reasonable modification or accommodation pursuant to the Americans with Disabilities Act ("ADA") please contact Board Clerk Andrea Pizano at andrea.pizano@svcleanenergy.org prior to the meeting for assistance.

AGENDA

Call to Order

Roll Call

Public Comment on Matters Not Listed on the Agenda

The public may provide comments on any matter not listed on the Agenda provided that it is within the subject matter jurisdiction of SVCE. Speakers are customarily limited to 3 minutes each, however, the Committee Chair may increase or decrease the time allotted to each speaker based on the number of speakers, the length of the agenda and the complexity of the subject matter. Speaking time will not be decreased to less than one minute.

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333 W El Camino Real
Suite 290
Sunnyvale, CA 94087



Consent Calendar (Action)

- 1) Approve Minutes of the August 28, 2020, Executive Committee Meeting

Howard Miller, Chair
City of Saratoga

Nancy Smith, Vice Chair
City of Sunnyvale

Liz Gibbons
City of Campbell

Rod Sinks
City of Cupertino

Fred M. Tovar
City of Gilroy

Neysa Fligor
City of Los Altos

George Tyson
Town of Los Altos Hills

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Javed Ellahie
City of Monte Sereno

Yvonne Martinez Beltran
City of Morgan Hill

Margaret Abe-Koga
City of Mountain View

Susan Ellenberg
County of Santa Clara

Regular Calendar

- 2) CEO Update (Discussion)
- 3) Building Decarbonization Joint Action Plan (Discussion)
- 4) PG&E Carbon-free Allocations for 2021 through 2023 Deliveries (Action)
- 5) Amend Master Consulting Agreements – Extend Term and Spending Authority (Action)
- 6) Update on Long-Duration Storage (Discussion)

Committee/Staff Remarks

Adjourn

svcleanenergy.org

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Suite 290
Sunnyvale, CA 94087



**Silicon Valley Clean Energy
Executive Committee Meeting**

Friday, August 28, 2020
8:30 a.m.

Howard Miller, Chair
City of Saratoga

Nancy Smith, Vice Chair
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Liz Gibbons
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Yvonne Martinez Beltran
City of Morgan Hill

Margaret Abe-Koga
City of Mountain View

Susan Ellenberg
County of Santa Clara

Pursuant to State of California Executive Order N-29-20, dated March 17, 2020, the meeting was conducted via teleconference.

DRAFT MINUTES

Call to Order

Chair Miller called the meeting to order at 8:31 a.m.

Roll Call

Present:

Chair Howard Miller, City of Saratoga
Vice Chair Nancy Smith, City of Sunnyvale
Director Liz Gibbons, City of Campbell
Director Rod Sinks, City of Cupertino

Absent:

Director Margaret Abe-Koga, Mountain View

All committee members participated via teleconference.

Public Comment on Matters Not Listed on the Agenda

No speakers.

Consent Calendar

MOTION: Vice Chair Smith moved and Director Gibbons seconded the motion to approve the Consent Calendar.

The motion carried unanimously by verbal roll call vote with Director Abe-Koga absent.

- 1a) Approve Minutes of the June 26, 2020, Executive Committee Meeting**
- 1b) Approve Minutes of the July 29, 2020, Executive Committee Special Meeting**
- 1c) Approve Reschedule Date of the November and December Executive Committee Meetings to November 23, 2020 at 11:00 a.m.**

Regular Calendar

2) CEO Update (Discussion)

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Howard Miller, Chair
City of Saratoga

CEO Girish Balachandran presented a PowerPoint presentation on upcoming Board meeting items, which included establishing a renewable power prepay option, creation of a super JPA for long-duration storage and other large multi-CCA transactions, the SVCE FY20-21 budget, other informational items. CEO Balachandran provided an update on the recent blackouts, and noted an upcoming op-ed piece being co-authored by Director Ellenberg. Power Supply Manager Ian Williams provided a verbal update on the power blackouts.

Nancy Smith, Vice Chair
City of Sunnyvale

Liz Gibbons
City of Campbell

CEO Balachandran responded to committee member questions. The committee discussed the renewable power prepay option.

Rod Sinks
City of Cupertino

Director Gibbons requested an update be provided on the time of use transition at the Board of Directors meeting.

Fred M. Tovar
City of Gilroy

Chair Miller opened public comment.

Bruce Karney provided comments and questions on the power prepay agreement and consternation from other community members on the power blackouts.

Neysa Fligor
City of Los Altos

Tony Eulo commented appreciation to Communications Manager Pamela Leonard for the messaging provided to board members to encourage members of the community to conserve energy during peak hours, and inquired if there is a way of knowing how responsible SVCE customers were in responding to the request, and if there is a way to see patterns of energy consumptions amongst cities that shared the information.

George Tyson
Town of Los Altos Hills

Chair Miller closed public comment.

Rob Rennie
Town of Los Gatos

CEO Balachandran responded to Mr. Karney's questions and noted a meeting would be scheduled with him to discuss the power prepay agreement in more detail. CEO Balachandran noted staff would discuss Mr. Eulo's inquiry and get back to him and committee members.

Carmen Montano
City of Milpitas

Javed Ellahie
City of Monte Sereno

3) Strategic Plan Update (Discussion)

CEO Balachandran presented a PowerPoint presentation on the progress of the Strategic Plan.

Yvonne Martinez Beltran
City of Morgan Hill

Chair Miller opened public comment.

No speakers.

Margaret Abe-Koga
City of Mountain View

Chair Miller closed public comment.

Susan Ellenberg
County of Santa Clara

4) Update on Master Service Agreements for Program Admin Support (Discussion)

Director of Decarbonization and Grid Innovation Programs Aimee Bailey presented a PowerPoint presentation and responded to committee member questions regarding the master service agreements with SMUD, CSE and ADM.

Director Gibbons suggested staff check SVCE policy on duration of contracts; CEO Balachandran confirmed he would check policy and commented general practice is to have three to five-year terms before going back out to bid.



Howard Miller, Chair
City of Saratoga

Director Sinks inquired what the overhead in program administration would be if the contracts were extended; Director of Decarbonization and Grid Innovation Programs Bailey noted staff would calculate and get back with an answer.

Nancy Smith, Vice Chair
City of Sunnyvale

Director Sinks suggested adding contextual information including the run rate of the contracts, the point that contracts are being continued in the interest of efficiency, and due to the pandemic, more work is being done than anticipated.

Liz Gibbons
City of Campbell

Chair Miller opened public comment.
No speakers.
Chair Miller closed public comment.

Rod Sinks
City of Cupertino

5) Amend Resolution Authorizing the CEO to Grant Current 20 Days of Paid-Time-Off to Employees Affected by the COVID-19 Disease to Include Employee Time Off for Personal Emergency Response Related to Wildfire Events (Discussion)

Fred M. Tovar
City of Gilroy

CEO Balachandran introduced the item.

Neysa Fligor
City of Los Altos

The committee discussed the request to include emergency situations in the 20 days of paid-time-off. The committee was in consensus to support the request, tie the resolution to the fiscal year, and call out the disasters which the resolution would cover.

George Tyson
Town of Los Altos Hills

Chair Miller opened public comment.

Rob Rennie
Town of Los Gatos

Tony Eulo commented the City of Morgan Hill received a notification from the state regarding an infestation of oriental fruit flies.

Chair Miller closed public comment.

Carmen Montano
City of Milpitas

Committee/Staff Remarks

Chair Miller noted it was a spare the air day.

Javed Ellahie
City of Monte Sereno

Adjournment

Chair Miller adjourned the meeting at 9:40 a.m.

Yvonne Martinez Beltran
City of Morgan Hill

Margaret Abe-Koga
City of Mountain View

Susan Ellenberg
County of Santa Clara



Staff Report – Item 2

Item 2: CEO Update

From: Girish Balachandran, Chief Executive Officer

Prepared by: Andrea Pizano, Board Clerk/Executive Assistant

Date: 9/25/2020

This item will be addressed in the form of an oral report and presentation to the Executive Committee from CEO Girish Balachandran.



Staff Report – Item 3

Item 3: Building Decarbonization Joint Action Plan

From: Girish Balachandran, CEO

Prepared by: Aimee Bailey, Director of Decarbonization & Grid Innovation

Date: 9/25/2020

This item is an informational update that will be addressed in the form of a presentation to the Committee by Director of Decarbonization and Grid Innovation Programs Aimee Bailey. The presentation refers to the attached Building Decarbonization Joint Action Plan.

ATTACHMENTS

1. Building Decarbonization Joint Action Plan

BUILDING DECARBONIZATION JOINT ACTION PLAN

September 20, 2020

DRAFT - NOT YET ADOPTED BY SVCE BOARD

This is a printer-friendly version of the Plan. A graphic-intensive version will be finalized and published after SVCE Board review and approval.

Integral Group for Silicon Valley Clean Energy

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ABOUT THIS PLAN

Buildings are currently responsible for approximately one-third of greenhouse gas emissions in SVCE communities. Rapidly reducing emissions from the built environment is critical to meet science-based emissions reduction targets to address the climate crisis. SVCE and the thirteen Member Agencies developed this Building Decarbonization Joint Action Plan ('the Plan') that builds off of the 2018 *Decarbonization Strategy & Programs Roadmap* ('the Roadmap') identifying building sector decarbonization as a key priority in meeting the region's climate goals and the recent reach code effort ('*Reach Code Initiative*') that resulted in 9 of the 13 Member Agencies adopting decarbonized building and electric vehicle charging infrastructure codes. The purpose of the Plan is to articulate a shared vision for how SVCE and Member Agencies can build on this progress, to continue to work to decarbonize the built environment. It establishes a set of priorities and actions that joint parties have committed to advancing, with a continued focus on activities where local agencies such as SVCE and Member Agencies have highest leverage and influence. It was created through a joint planning process designed to facilitate the emergence of new solutions, cultivate community buy-in, and coordinate peer-to-peer learning. Goals and actions were developed using a combination of research and prior program experience, as well as stakeholder workshops, interviews, and feedback and filtered through SVCE's Board-adopted strategic framework from the Roadmap.

ACKNOWLEDGEMENTS

The Plan is informed by a robust stakeholder engagement process that included community members, subject matter experts, industry stakeholders, and staff from member jurisdictions. A series of workshops, surveys, and interviews held between April and August formed the basis for the strategies included in this Plan, and we are grateful for the contributions of the following individuals. Please note that acknowledgement of their contributions does not imply their endorsement of the Plan or contents.

- Aaron Kovach, Infinera
- Adam Albright, Infinera
- Al Gaspari Jr., PG&E
- Aleka Seville, Sonoma County RCPA
- Alice Sung, Greenbank Associates
- Amelie Besson, MidPen Housing
- Amy Egarter, Rocky Mountain Institute
- Andre Duurvoort, City of Cupertino
- Asim Tahir, Google
- Axum Teferra, BAAQMD
- Beckie Menten, East Bay Community Energy
- Bruce Karney, Carbon Free Mountain View
- Bruce Naegel, Sustainable Silicon Valley
- Bruce Mast, Ardenna Energy
- Christine Tam, City of Palo Alto
- David Sawaya, PG&E
- Denise Grab, Rocky Mountain Institute
- Doug Kunz, Sunnyvale Cool
- Eena Maria, Santa Clara County
- Emiko Ancheta, City of Los Altos
- Eric Hansen, SummerHill
- Erin Brewster, City of Mountain View
- Gilee Corral, City of Cupertino
- Hannah Kaye, PG&E
- James Tuleya, Carbon Free Silicon Valley and Sunnyvale Cool
- Jan Berman, PG&E
- Jenny Burg, BayREN
- Kara Gross, Joint Venture Silicon Valley
- Ken Rider, California Energy Commission
- Kristel Wickham, City of Sunnyvale
- Madeline Willett, City of Sunnyvale
- Matt Golden, Recurve
- McGee Young, Recurve
- Melody Tovar, City of Sunnyvale
- Nick Derr, AEA
- Nick Pappas, CalCCA
- Nupur Hiremath, City of Sunnyvale
- Owen Howlett, SMUD
- Panama Bartholomy, Building Decarb Coalition
- Paul Whitman, W-Land Energy Efficiency Group
- Peter Thompson, PG&E
- Peter Turnbull, Peter Turnbull and Associates
- Rachel Kuykendall, Sonoma Clean Power
- Rafael Reyes, Peninsula Clean Energy
- Ram Narayanamurthy, EPRI

- Rory Cox, CPUC
- Scott Blunk, SMUD
- Scott Shell, EHDD Architecture
- Srinidhi Sampath Kumar, California Housing Partnership Corporation
- Steve Attinger, City of Mountain View
- Steve Joesten, Infinera
- Steve Schmidt, Carbon Free Silicon Valley
- Steven Flores, UA Local Union 393
- Susana Mercado, County of Santa Clara
- Tom Kabat, Carbon Free Silicon Valley
- Tony Eulo, City of Morgan Hill
- Tonya Veitch, Santa Clara County

DRAFT

BACKGROUND

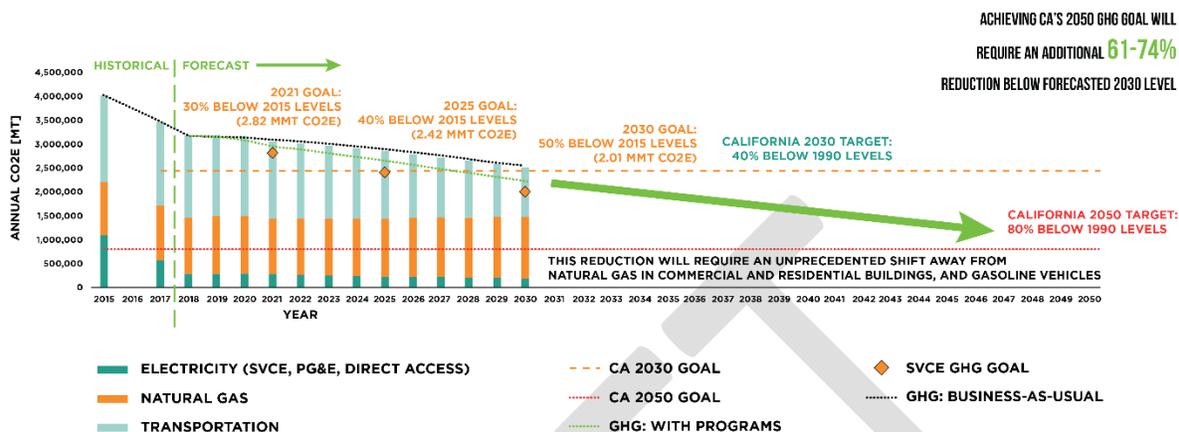


Figure 1: SVCE historical emissions and goals from 2018 Decarbonization Strategy & Programs Roadmap

In December 2018, SVCE's Board of Directors adopted ambitious goals for GHG emission reductions across the service territory, including the 2025 target of achieving a 40% reduction below 2015 levels, and 50% by 2030 (see Figure 1). These goals are aligned with the level of action needed to contain global temperature rise to within 2 degrees Celsius as outlined in the Paris Agreement.¹ California has further ramped up the timeline, calling for a goal of carbon neutrality by 2045, in acknowledgment of the need to avoid the worst impacts of a warmer climate.² Although important progress has been made to date – specifically in the electricity sector – massive and rapid additional reductions must be further achieved, including reductions within the built environment.³

Neither SVCE & Member Agencies nor California can meet 2030 GHG targets without massive reductions in natural gas use through extensive electrification.⁴ Since natural gas is primarily used for space and water heating, emissions from those uses will increase with population growth no matter how efficiently natural gas is used. While cost-effective energy efficiency measures such as improvements to windows or insulation are fundamental to the electrification transition, electrifying

SVCE's Clean Power Supply

SVCE is committed to providing clean, affordable, and reliable electricity to power the community's homes and buildings. Customers have two electricity options: GreenStart (carbon free and 50% renewable) and GreenPrime (100% renewable). As of June 2020, SVCE's investments have surpassed \$1 billion to build and operate long-term renewable energy resources, which equates to 384 MW of generating capacity. Additional generating capacity is in the process of being procured to meet long-term climate goals.

¹ <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>

² See Executive Order B-55-18.

³ Cunningham, "California's Building Opportunity", 3.

⁴ Williams, "Pathways to deep decarbonization," xiv.

the underlying technology is ultimately both necessary and more cost effective than efficiency alone. Finally, GHG inventories and targets customarily only consider emissions at the point of use, but the natural gas extraction, transmission and distribution systems create additional climate and public health risks through the widespread leakage of methane before it even gets to a point of use, which by some estimates amounts to 9% of all natural gas produced.⁵

Decarbonizing Buildings

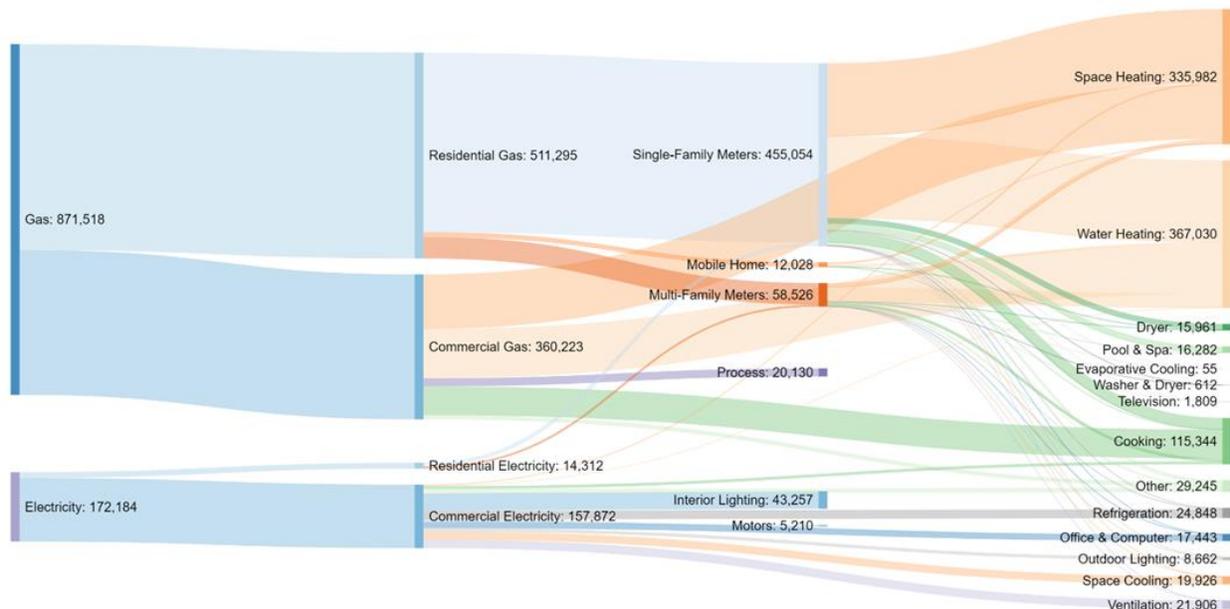


Figure 2: Emissions from the built environment disaggregated by fuel source, sector, and end use

Buildings account for approximately one-third of total emissions in SVCE service territory. The majority of building emissions are from natural gas combustion (83%), primarily for space and water heating as seen in Figure 2. As electricity supplies become cleaner, driven by local and statewide renewable energy targets, the percentage of emissions attributed to natural gas will continue to grow.

⁵ <https://www.ucsusa.org/resources/fugitive-methane-emissions#.WYS0SVWGOpp>

Electrification refers to the replacement of fossil fuel appliances with advanced electric alternatives that run on clean electricity (see examples in Figure 3).⁶ Although all-electric construction is common in other markets both internationally and in multiple regions of the United States,⁷ in SVCE service territory, the vast majority of homes and buildings use natural gas heating. Electric heat pumps – the primary technology for space and water heating – work like a refrigerator, using a refrigerant to move heat or cooling from one area or another. While not a new

Energy Resilience

Electrification is the key for building decarbonization, and it will mean more reliance on the electricity system. SVCE has been and continues to explore novel approaches to energy resilience at the micro and macro levels. SVCE is sponsoring grants to Member Agencies to upgrade community facilities to enhance resilience. SVCE is also leading the development of a community-wide resilience plan. Meanwhile, community members can take advantage of SVCE's online resources to get solar and storage quotes or receive a rebate for installing a backup system and participating in an SVCE program to help reduce peak demands on the grid. Energy resilience upgrades must work hand-in-hand with electrification activities to jointly make homes and businesses more prepared for future challenges.

technology and used throughout the US and internationally for decades, heat pump technology continues to advance with even greater efficiency in very cold climates and improved refrigerants with low or no global warming potential. Newer induction cooktops use electromagnetic technology to generate heat, consistently outperforming gas cooktops on Consumer Reports.⁸ In contrast to outdated electric resistance technology, induction boils water in half the time, can get to much lower simmer temperatures than gas, is safer in terms of burn risk and air quality, and is cost competitive, making it an increasing trend even in the US.⁹

Building electrification yields numerous additional benefits for the customer and the grid that make it a high-value climate solution: improved health outcomes,¹⁰ increased energy efficiency, cost effective replacement of heating and cooling in one piece of equipment,¹¹ and supply and demand management with smart technologies.¹² In short, electrifying everything and using SVCE's clean electricity supply means that going all-electric is not only better for the climate but can yield multiple benefits for the customer and community, as well.

⁶ See Williams, "Pathways to deep decarbonization" and Mahone, "Deep Decarbonization."

⁷ One in four U.S. homes is all-electric and is even higher in the south. See Deason, "Electrification of buildings," 11 and <https://www.eia.gov/todayinenergy/detail.php?id=39293>.

⁸ <https://www.consumerreports.org/electric-cooktops/the-best-induction-cooktops/>

⁹ <https://www.reviewed.com/ovens/features/induction-101-better-cooking-through-science>

¹⁰ Brady, "Health Effects from Gas Stove Pollution," 2020.

¹¹ Price, 61.

¹² Carew, "Heat Pump Water Heater Electric Load Shifting," 25.

The sheer speed and scale of building electrification required to address climate change is unprecedented. It is anticipated that 50% of new water heaters and space conditioning equipment

Electric Vehicle Infrastructure Joint Action Plan

Emissions from transportation comprise the largest source of GHG emissions within SVCE service territory. Vehicle electrification plays an important role in transportation emissions reductions that also aligns with SVCE's core mission and business. In 2019, the SVCE Board of Directors adopted an Electric Vehicle Infrastructure Joint Action Plan and approved \$8 million in charging infrastructure incentives and investments over the FY 2020 – FY 2023 period. That plan identified several initiatives that overlap with those necessary for building electrification, and the already-launched electric vehicle infrastructure programs are being used to gather building-relevant information and tactics to inform the buildout of the initiatives in the Plan. Efforts across these various programs will be streamlined and combined to benefit both transportation and building decarbonization.

sales needs to be all-electric by 2030 in order to meet climate goals without requiring early removal of functioning systems.¹³ In contrast, heat pump technologies in SVCE territory are estimated to have less than 5% of market penetration today,¹⁴ meaning that meeting this rapid market transformation will require retrofitting 7,500 homes per year – or 20 homes every day – for the next 10 years. In addition to similar rates of retrofit for commercial and multi-family. This is assuming there is no further expansion of natural gas infrastructure (i.e. all new construction is all-electric).

¹³ Mahone, 32.

¹⁴ Price, "SVCE DER Electrification Adoption Potential," 4.

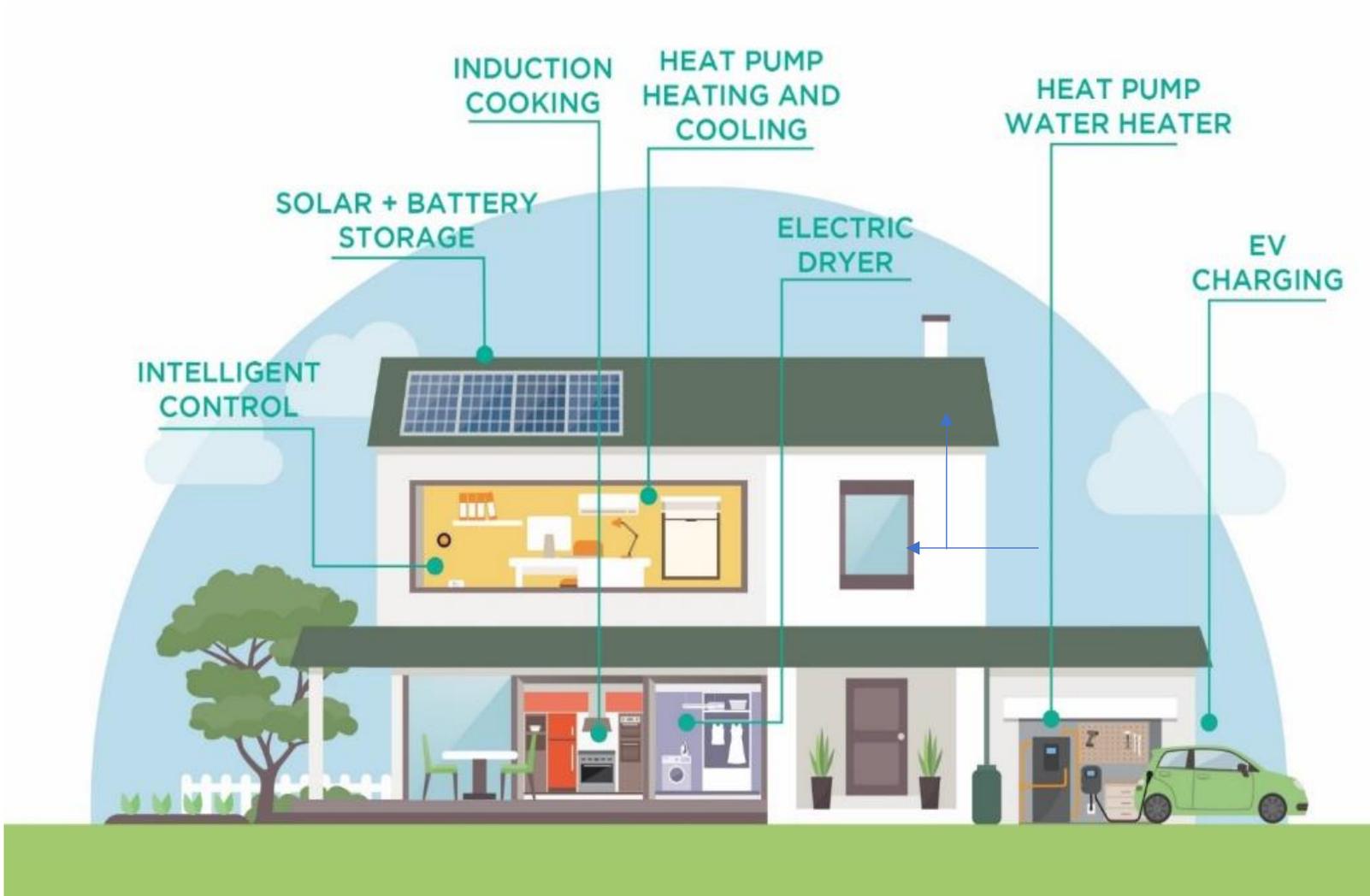


Figure 3: All-electric technologies of a "FutureFit" home

Barriers to Electrification & Opportunities for Intervention

All-electric buildings are common in other parts of the world and even other parts of the US. One in four homes are all-electric nationally and almost half in the south¹⁵ do not use gas. In comparison, saturation of electrification technologies in SVCE territory is less than 4%.¹⁶ Given that market adoption is still in its infancy, accelerating building electrification will require tackling a broad set of barriers with a variety of types of interventions beyond incentives alone.

The following list of barriers were identified and developed during the stakeholder engagement process and have been influenced by the Building Decarbonization Coalition's *Building Decarbonization Roadmap*, which describes five primary barriers: low awareness & interest, low perceived customer value, low perceived contractor & builder value, low availability, and misaligned policy.¹⁷

Barriers



Low Awareness
& Interest

- Customers, contractors and other stakeholders do not know what electrification means nor do they understand the benefits
- Consumer preference drives opinion rather than technological limitation (e.g. cooking)



Low Perceived
Customer Value

- Cost and access to affordable financing is a challenge
- Current incentives and other support programs do not bridge the gap to make electrifying existing buildings cost-competitive, especially for low-income customers



Low Perceived
Contractor &
Builder Value

- Lack of consumer demand to incentivize contractors to promote electrification
- Lack of coordination and support from permitting offices and processes



Low Availability

- Lack of adequate supply of available technologies
- Lack of adequate electrical capacity in existing buildings¹⁸



Misaligned
Policy

- Policies that continue to allow for new gas infrastructure do not align with climate goals
- Lack of relevant, supportive appliance standards¹⁹
- Changes to policy, codes and standards changes are needed to help bring down the costs of electrification²⁰

¹⁵ See Deason, "Electrification of buildings," 11 and <https://www.eia.gov/todayinenergy/detail.php?id=39293>.

¹⁶ Price, "SVCE DER Electrification," 30.

¹⁷ The structure of the barriers in the BDC Roadmap influenced those described here and were validated and reinforced through stakeholder surveys and workshops carried out in the development of this Joint Action Plan.

¹⁸ Three-quarters of homes in SVCE territory were built before 1970, indicating that many of these residences will require electrical panel upgrades in order to accommodate electrification according to the Building Decarbonization Coalition's "Decoding Grid Integrated Buildings Report."

¹⁹ Until recently, energy efficiency standard requirements prevented rebates for fuel-switching. A recent update to 1990s era policy regulating funding for energy efficiency – commonly known as the "three prong test" – has opened the door to using public energy efficiency dollars for technologies that also allow for fuel switching.

²⁰ Mahone, 3.

California is in the early stages of building decarbonization, and all strategies from incentives to education to research and development are needed to accelerate market adoption. Interventions described in this plan fall into the following four categories.

Interventions



Retail Products
& Services

- Develop and support **innovative new products and services** to meet customer needs and decarbonize.
- Increase equitable access to quality building electrification retrofits through **accessible financing and incentives** as well as drive down first costs.
- **Building-grid integration** can enable grid services such as capacity, resiliency, load balancing, and carbon reduction to unlock new value streams.



Education &
Outreach

- Increase public **awareness** and education on electrification and actions to reduce emissions.
- Shift **consumer preference** and establish demand by communicating the positive benefits of building electrification for health and the climate.



Public
Policy

- Expand state and local **policy activity** on decarbonization, while strengthening local and regional agency coordination.
- Align policies to maximize awareness of and interest in building decarbonization, the value proposition, and the industry's ability to meet rising demand.



Market
Transformation

- Catalyze market transformation through coalitions and partnerships with actors in industry and the innovation ecosystem
- Build industry capacity through **workforce development** to deliver and value electrification.
- Foster **regional coordination** to share information and develop a regional approach to collective action.
- Support **innovation** to address key technical, market and policy barriers to achieving building decarbonization.

State & Regional Context

Countering decarbonization barriers requires a multi-pronged, coordinated approach that incorporates a variety of types of interventions carried out by multiple agencies and stakeholders. While much more needs to be done, there has and continues to be tremendous activity at the state and regional level on building decarbonization. The actions in this Plan have been developed with these activities and context in mind, to recognize where SVCE and Member Agencies are best suited to intervene given their respective areas of control and influence. Key activities taken into consideration include the following.

- *Aligning the state building code:* The California Energy Commission (CEC) updates Title 24 - California Building Energy Efficiency Standards - every three years and the 2022 code cycle is anticipated to address several of the current code barriers to electrification.
- *Assessing pathways to deep building decarbonization in California:* AB-3232 Zero-emissions buildings and sources of heat energy requires that by January 2021, the State Energy

Resources Conservation and Development Commission will issue a feasibility assessment of the potential for the state to reduce emissions of GHGs in the residential and commercial building stock by at least 40% below 1990 levels by 2030.

- *Statewide funding for building electrification*: SB-1477 Low-emissions buildings and sources of heat energy requires the development of two new pilot programs that will direct \$200 million in funding over the next four years towards building decarbonization: the Building Initiative for Low Emissions Development (BUILD) and the Technology and Equipment for Clean Heating (TECH).
- *Transitioning off natural gas*: The California Public Utilities Commission has launched a 3-phase *Natural Gas Planning Proceedings* to anticipate and plan for a long-term strategy for transitioning away from natural gas in order to meet California's climate goals in such a way that it maintains safety, reliability, and affordability. PG&E has also signaled its support for electrification through a letter to the CEC regarding the 2022 code update.²¹
- *Expanded access to funding for electrification*: Incentives are primarily rate-payer funded energy efficiency programs, which after recent changes to state regulation now allow for fuel substitution.²² BayREN, PG&E, BAAQMD, and others are now offering rebates and incentives for all-electric technologies in addition to traditional energy efficiency measures.

The Role of SVCE & Member Agencies

SVCE and Member Agencies can play a role in the larger building decarbonization effort by catalyzing local adoption of building electrification and demonstrating the viability of different strategies to help influence and support external stakeholder efforts. SVCE's core role includes its ability to develop, craft, and fund retail products and services that raise awareness, bring down the costs of electrification, and bring together stakeholders to collectively catalyze market transformation. Member Agencies can accelerate the transition through key policy initiatives as well as remove barriers to electrification inadvertently embedded in local codes and standards. The Reach Code Initiative is an excellent example of the power of partnership between SVCE and Member Agencies. Through SVCE's technical and financial support and regional collaboration, twelve of the thirteen Member Agencies have adopted or are in the process of reviewing proposals for reach codes.

²¹ PG&E recently issued a letter to the CEC in support of promoting electrification in the 2022 code update. See <https://www.utilitydive.com/news/a-critical-milestone-pge-first-gas-electric-iou-to-publicly-support-cal/580598/>

²² Often referred to as the "three-prong test", the 1990 era policy required that any energy efficiency measures using public benefits funds would reduce energy use, benefit the environment, and be cost-effective. This resulted in customers only being able to receive rebates for more efficient versions of existing appliances (e.g. a better gas furnace) but not for fuel-switching. In August 2019, the CPUC approved a decision to modify the test, which stood as a barrier to funding electrification measures. See <https://www.nrdc.org/experts/merrian-borgeson/ca-billion-efficiency-now-open-electrification#:~:text=The%20billion%20dollars%20spent%20annually,space%20heating%20and%20hot%20water.>

SPHERES OF CONTROL

SVCE

- Clean Energy Supply
- Electricity Generation Rates
- Grid Integration
- Regional Coordination
- Financing & Incentives
- Innovation

Member Agencies

- Local Codes, Standards & Policies
- Permitting
- Land Use Planning
- Municipal Buildings

SPHERE OF INFLUENCE

Other Stakeholders

- State Codes, Standards and Policies
- Regional Codes, Standards & Policies
- State & Regional Customer Programs
- Electric Grid Service, Rates & Modernization
- Industry Associations & Coalitions
- Environmental NGOs
- Manufacturers
- Labor & Workforce Associations
- Other CCAs, Local Governments, and Utilities

Figure 4: Spheres of control and influence for SVCE & Member Agencies

STRATEGIC FRAMEWORK

The actions in this Plan have been developed using the strategic framework outlined in the *Decarbonization Strategy & Programs Roadmap* (Roadmap), which was adopted by SVCE's Board of Directors in 2018. The strategic framework sets the parameters for achieving SVCE's ambitious climate goals, articulating what we will do, how we will leverage, and what priorities will guide us.

This Plan builds upon the Roadmap, identifying specific actions to decarbonize the built environment guided by the same three-part strategic framework described below. Actions are identified under the four primary interventions: retail products & services, education & outreach, public policy, and market transformation. Each action leverages innovation, data, and partnerships and has been evaluated to make sure that they meet SVCE's five priorities: customer & community value, emissions impact, scalable & transferable, equity in service, and core role for SVCE.

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



Public Policy: Expand state and local policy activity on decarbonization, while strengthening local and regional agency coordination



Market Transformation: Catalyze market transformation through coalitions and partnerships with actors in industry and the innovation ecosystem

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

What priorities will guide us?



Customer & Community Value: Deliver value to our customers and larger community through program offerings and ongoing initiatives



Emissions
Impact

Emissions Impact: Prioritize activities with greatest emissions reduction potential to achieve alignment with our mission



Scalable and
Transferable

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



Equity in
Service

Equity in Service: Balance activities to reflect the diversity of our customer base and geography



Core Role
for SVCE

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

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ACTION PLAN

This action plan is designed to be flexible and adaptable given the rapidly changing landscape of climate action and building decarbonization in California and in the region. The objective of these sets of actions is to strategically deploy limited resources to address the barriers described previously by shifting consumer preference and establishing demand; driving down costs; fostering supply chain and quality installations; and cultivating supportive policy. Each action aims to leverage external funding and partners where available to amplify the effectiveness of every dollar spent.

The Plan is organized into three focus areas: New Construction, Existing Buildings, and Market Development. Each focus areas includes one or more Cornerstone Actions that are a strategic focus both in terms of impact and anticipated level of resource investment. For each individual action, the category of activity is specified, which is one of the following from the Decarbonization Roadmap Strategic Framework: Public Policy; Products & Services; Education & Outreach; and Market Transformation. Furthermore, the specific barrier(s) that each action is intended to address are also noted.

The action plan includes an additional section describing Existing & Supportive Actions, which are priority programs that have already been approved by SVCE Board of Directors and are in various stages of development, as well as supportive actions that enable larger initiatives but require lesser effort.

New Construction

Electrifying new construction is critical to limit or prevent increasing emissions from the building sector. Stopping further development of fossil fuel infrastructure in our communities is fiscally prudent, in that gas infrastructure and appliances are stranded assets that will be difficult and expensive to retrofit later. Studies have demonstrated that all-electric new construction is cost-effective for most building types²³ but changes to policy, codes and standards are needed to help drive market adoption.²⁴ Policies have the benefit of providing long-term market certainty about a collective direction and can also drive adoption at scale in a way that education and incentives cannot.²⁵ Policies like reach codes advance building decarbonization cost-effectively by building demand, while expanding market awareness and readiness to be able to address existing buildings as well.

SVCE and Member Agencies will work to further advance building codes and standards development and embark on a Reach Code 2.0 initiative to address broader aspects of the built environment.

<i>Activity Type</i>	<i>Barriers Addressed</i>	<i>Cornerstone Actions</i>
 Public Policy	 Misaligned Policy	<p><u><i>NC1: Reach Code Initiative 2.0</i></u></p> <p>Evaluate the initial Reach Code Initiative in the 2019 building code cycle, assess gaps in application, and develop a second wave of Reach Code support that includes all new construction types as well as renovations (remodels and additions), regional alignment in approach, and potential new technology focus areas (e.g. storage). Assess the 2022 code (when released) and evaluate opportunity for new reach codes relative to the updated state baseline. Similar to the initial effort, SVCE will support by developing model policies; providing enhanced technical assistance; supplying background information and educational materials for architects and designers, contractors elected officials, staff, and the general public; and facilitating the stakeholder engagement. SVCE may also provide member agencies with an incentive to defer costs of staff participation.</p>

²³ See cost-effectiveness studies developed by the California Codes and Standards Reach Codes Program in 2019: <https://localenergycodes.com/content/2019-local-energy-ordinances/>

²⁴ Mahone, 3.

²⁵ SVCE Distributed Energy Resource & Electrification Potential Assessment

Existing Buildings

While the Reach Code Initiative is a critical step in avoiding new gas emissions, existing buildings pose the biggest challenge for decarbonization given the cost and complexity of retrofits. Emissions from existing buildings make up one-third of service territory wide emissions, the vast majority of which is from natural gas. Almost all single-family homes and the majority of commercial, multi-family and condo buildings are mixed fuel and will need to be retrofitted to achieve climate targets²⁶. Furthermore, three-quarters of homes in SVCE territory were built before 1970, indicating that many of these residences will require electrical panel upgrades in order to accommodate new loads.²⁷ In addition, existing electrical distribution may need to be improved in order to allow for large-scale electrification.

Whole-home electrification retrofits are highly unlikely to occur without intervention but incentives alone are not sufficient.²⁸ Specifically, HVAC heat pumps while economical, are low on the adoption curve. Cost effectiveness in commercial building retrofits is also challenging and further measures will be needed to encourage adoption in this sector as well.²⁹ Additionally, low-income communities, renters, condominium owners, and landlords may have lower access to traditional financing, lower ability to pay any upfront costs, less control over building upgrades, and less ability to navigate complex and time-intensive incentive application processes. Ensuring an equitable transition for these communities is a key priority for SVCE and was amplified during the stakeholder engagement process.

SVCE will support Member Agencies in assessing the feasibility of policy measures to address existing buildings. SVCE will further develop and support products and services including incentives and financing measures to increase equitable access to electrification measures.

²⁶ SVCE Buildings Baseline Study

²⁷ Building Decarbonization Coalition, "Decoding Grid Integrated Buildings Report," 7.

²⁸ SVCE DER Electrification Adoption Potential

²⁹ Additional cost-effectiveness studies for residential and non-residential buildings were developed by the California Codes and Standards Reach Codes Program in 2019: <https://localenergycodes.com/content/2019-local-energy-ordinances/>

Activity Type	Barriers Addressed	Cornerstone Actions
 Public Policy	 Misaligned Policy	<p><u>EB1: Feasibility Assessment for Natural Gas Phase Out by 2045</u></p> <p>Carry out a feasibility assessment to identify technical, legal and economic barriers and opportunities for phasing out natural gas service by 2045. The results from the assessment may inform future evaluation of potential local policies and regulations.</p>
 Public Policy	 Misaligned Policy	<p><u>EB2: Local Policy to Decarbonize Existing Buildings</u></p> <p>Retrofit or replace-on-burnout (ROB), time-of-sale (TOS), differential utility users tax, energy audits and benchmarking, and building emissions caps are all potential policy levers member agencies can explore to mitigate emission from existing buildings. Support member agencies in evaluating the feasible pathways to regulate existing building emissions and help develop model policy approaches and supportive programs to enable compliance.</p>
 Retail Products & Services	 Low Perceived Customer Value  Low Perceived Contractor & Builder Value  Low Availability	<p><u>EB3: FutureFit Homes & Buildings</u></p> <p>Provide comprehensive assistance to SVCE customers in navigating and accessing the many existing and forthcoming, non-SVCE led energy programs providing financial assistance for building decarbonization and energy efficiency, including HVAC, water heating, and cooking. Identify and address incentive gaps and layering opportunities as well as participation barriers, providing precise and targeted additional financial resources, where needed. Prioritization will be on low-income residents, affordable housing providers, and small businesses, as well as customers with high-heat vulnerabilities. SVCE’s FutureFit Heat Pump Water Heater Program will be integrated into this broader program going forward.</p>

Activity Type	Barriers Addressed	Cornerstone Actions
 Retail Products & Services	 Low Perceived Customer Value  Low Perceived Contractor & Builder Value  Low Availability	<p><u>EB4: Accessible Financing</u></p> <p>Assess feasibility of financing mechanisms to unlock equitable financing for energy efficiency and electrification across the region, particularly for low-income communities. Potential strategies to be evaluated include tariffed or more standard on-bill financing, electrification-as-a-service business models, or other opportunities to help overcome financial barriers (first costs, access to credit etc).</p>

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Market Development

Transitioning away from natural gas will require an unprecedented cultural, technical, and economic shift but lack of awareness, low perceived value, and low availability are significant barriers to adoption. Market transformation will require a proactive and coordinated effort to increase awareness and demand for building electrification as well as workforce capacity to deliver on that demand. Building community support and interest will in turn develop political will for even deeper decarbonization efforts.

A recent survey of contractor attitudes towards electrification revealed the specific challenges to market transformation. In general, contractors lack awareness and understanding of the benefits and reasons why all-electric technologies are needed and are viable.³⁰ Recommendations from the report include providing incentives to bring down the cost of retrofits; promoting manufacturer trainings to installers; communicating to contractors the business case for electrification; developing marketing materials for sales staff and installers; and offering low or no-interest financing options for low-income customers. These issues were also echoed as a barrier in the stakeholder surveys and workshops for this Plan.

In response, market development initiatives in this Plan focus on expanding regional coordination and workforce development.

<i>Activity Type</i>	<i>Barriers Addressed</i>	<i>Cornerstone Actions</i>
 Education & Outreach	 Low Awareness & Interest  Low Perceived Contractor & Builder Value  Low Availability	<p><u>MD1: Regional Coordination</u> SVCE will initiate regular regional stakeholders convenings to coordinate program alignment; streamline access to incentive funds; identify strategies to lower costs; inform the development of the positive messaging campaign and general building decarbonization communication needs; and reveal and address barriers to workforce development. Regional coordination will be used to build off existing and forthcoming programs such as TECH and BUILD to develop additional programs to support workforce development. Stakeholders include Member Agencies, local building industry stakeholders, business community, BAAQMD, BayREN, other CCAs, PG&E, healthcare agencies, educational institutions, and non-governmental organisations.</p>

³⁰ See BDC hosted “Contractor Needs Assessment” presentation from April 23, 2020: <http://www.buildingdecarb.org/webinars.html>

Existing & Supportive Actions

SVCE has a range of existing complimentary building decarbonization programs in various stages of development and implementation. In addition, supportive actions have been identified as part of this Plan that represent ways in which SVCE can leverage its leadership and role as regional convener to bring together external partners around key issues.

Activity Type	Existing & Supportive Actions
 <p data-bbox="210 490 317 521">Retail Products & Services</p>	<ul style="list-style-type: none"> <li data-bbox="527 418 1906 607">• <u>Virtual Power Plant Initiative</u>: Leverage SVCE’s “virtual power plant” (VPP) program to pilot grid-interactive efficient buildings, integrating multiple customer resources such as energy efficiency, storage, heat pump water heaters and electric vehicles to provide grid services. Through the pilot, identify and address key technical, market, and/or economic barriers for leveraging buildings for demand flexibility and achieving broad-based deployment. <li data-bbox="527 630 1906 737">• <u>Retail Rates Assessment</u>: Assess retail rates to develop multi-phase plan for improvements and development of pilot rates that will remove barriers to building electrification. For example, new time-of-use periods, alternative baselining calculations, dynamic pricing, and subscription models. <li data-bbox="527 760 1906 867">• <u>Electrical Distribution & Panel Capacity Assessment</u>: Assess electrical distribution and electrical panel capacity limits to accommodate scaled-up building and vehicle electrification as well as novel retrofit solutions for managing increased load, particularly for multi-family and commercial.
 <p data-bbox="214 964 298 995">Education & Outreach</p>	<ul style="list-style-type: none"> <li data-bbox="527 893 1906 1042">• <u>Customer Resource Center</u>: Launch an online resource center to enable engagement and awareness-building, education and action related to understanding energy usage, vehicle and building electrification. Carry out outbound engagement and proactive communication with our customer base to advance our decarb mission. Please see: svcleanenergy.org/ehub/. <li data-bbox="527 1065 1906 1214">• <u>Positive Messaging Campaign</u>: Participate in the Building Decarbonization Coalition’s “The Switch is On” marketing campaign with other regional partners. Using the lessons learned from “The Switch is On” and the eHub roll-out, continue to cultivate regional partnership for an ongoing regional marketing effort to promote awareness and public education around electrification. <li data-bbox="527 1237 1906 1354">• <u>SVCE’s “Watts for Lunch”</u>: Continue to leverage SVCE’s “Watts for Lunch” program to educate commercial and industrial community about building electrification and solicit feedback on needed industry support.

Activity Type	Existing & Supportive Actions
	<ul style="list-style-type: none"> • <u>Streamlining Community-Wide Electrification</u>: Survey and review local city policies (codes, permitting, inspection, incentives, etc.) to support the development of model policies and processes to better enable electrification. Develop a best practice guide for streamlining community-wide decarbonization. • <u>State Policy Coordination & Advocacy</u>: Participate as a stakeholder in state policy proceedings to advocate for the continued advancement of building decarbonization policies, particularly the 2022 Title 24 energy code update but also AB 3232, SB 1477, and the natural gas planning proceedings. Also advocate for accelerated statewide action to bring down costs of electrification and scale up conversions to meet climate targets. • <u>Regional Policy Coordination</u>: Coordinate with BAAQMD to advance building decarbonization through, for instance, appliance standards, land use planning, innovation and public awareness campaigns.
	<ul style="list-style-type: none"> • <u>FutureFit Fundamentals Contractor Training</u>: Provide COVID-driven workforce relief by expanding awareness of electrification technologies and offering valuable virtual training. Provide immediate financial relief to contractor workforce through installation incentives for relevant technologies. • <u>Innovation Partners & Innovation Onramp</u>: Leverage SVCE's innovation programs to explore key solutions to building decarbonization including "smart panels" and other demand flexibility innovations, district energy solutions, electrification-as-a-service business models, and carbon-free backup power. • <u>Research & Development Support</u>: Advocate to state regulators for additional research on technology development and fuel-switching solutions, as well as research on the co-benefits of building decarbonization including improved health and reduced health care costs. Participate and contribute to research conducted by others on building decarbonization, including R&D priorities identified by BDC.

WHAT'S NEXT

Meeting climate goals requires rapid and expansion action from a variety of stakeholders to accelerate building decarbonization. Implementation of this Plan is scheduled for the 2021-2023 timeframe.

Progress will be measured and monitored in several ways. First, SVCE will continue carrying out an annual GHG emissions inventory by source and sector, and will evaluate sector-specific reduction targets for both buildings and transportation in the coming two years. Second, SVCE will identify and track several key performance indicators (KPIs) for monitoring progress in the built environment, which may include energy use and emissions intensity by square footage, square footage of new construction and existing buildings that is all-electric, and distributed energy resource deployment (storage, rooftop solar, EV charging, etc.). Consistent with existing program practice, program development for each of the actions in this Plan will include more detail on specific quantifiable outcomes; time-bound targets; required resources; and development of an evaluation, measurement and verification plan.

Progress on Plan implementation will be reported regularly to SVCE's Board of Directors and community. The Plan will be reassessed in approximately three years to determine the next suite of transformative actions.

APPENDIX I: ACTION PLAN SUMMARY

Focus Area Cornerstone Action

Activity Type



Innovation



Data



Partnerships



Customer & Community Value



Emissions Impact



Scalable and Transferable



Equity in Service



Core Role for SVCE

Focus Area	Cornerstone Action	Activity Type	Innovation	Data	Partnerships	Customer & Community Value	Emissions Impact	Scalable and Transferable	Equity in Service	Core Role for SVCE
New Construction	<p>NC1: Reach Code Initiative 2.0 Evaluate the initial Reach Code Initiative and develop a second wave of Reach Code support that includes all new construction types as well as renovations.</p>	Public Policy				●	●	●	●	●
	Existing Buildings	<p>EB1: Feasibility Assessment for Natural Gas Phase Out by 2045 Carry out technical, economic and legal feasibility assessment of pathways to phasing out natural gas service by 2045.</p>	Public Policy			●	●	●	●	●
		<p>EB2: Local Policy to Decarbonize Existing Buildings Support member agencies in evaluating feasible pathways to regulate existing building emissions and help develop model policy approaches.</p>	Public Policy			●	●	●	◐	●
		<p>EB3: FutureFit Homes & Buildings Provide comprehensive assistance to SVCE customers in navigating and accessing non-SVCE led energy programs and identify and address incentive gaps and layering opportunities.</p>	Retail Products & Services			●	◐	◐	●	●
<p>EB4: Accessible Financing Assess feasibility of financing mechanisms to unlock equitable financing, particularly for low-income communities.</p>	Retail Products & Services			●	◐	●	●	●		

Sector *Cornerstone Action*

Category



Innovation



Data



Partnerships



Customer & Community Value



Emissions Impact



Scalable and Transferable



Equity in Service



Core Role for SVCE

Market Development

MD1: Regional Coordination

Initiate regular regional stakeholders meetings to coordinate program alignment; streamline access to incentive funds; identify strategies to lower costs; inform messaging and communication needs; and assess barriers and opportunities to workforce development.



Market Transformation

Stakeholders include Member Agencies, local building industry stakeholders, business community, BAAQMD, BayREN, other CCAs, PG&E, healthcare agencies, educational institutions, and non-governmental organizations.



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Staff Report – Item 4

Item 4: PG&E Carbon-free Allocations for 2021 through 2023 Deliveries

From: Girish Balachandran, CEO

Prepared by: Andrea Pizano, Board Clerk/Executive Assistant

Date: 9/25/2020

This item will be addressed as a presentation to the committee from Director of Power Resources Monica Padilla with a staff recommendation for the Executive Committee to recommend the Board approve accepting PG&E's large hydro and nuclear carbon-free allocations for 2021-23, and delegate authority to the CEO to enter into necessary agreements.



Staff Report – Item 5

Item 5: Amend Master Consulting Agreements – Extend Term and Spending Authority

From: Girish Balachandran, CEO

Prepared by: Andrea Pizano, Board Clerk/Executive Assistant

Date: 9/25/2020

This item will be addressed as a presentation to the committee from Director of Power Resources Monica Padilla, with a staff recommendation for the Executive Committee to recommend Board approval of term extension and spending authority for master consulting agreements with Ascend Analytics, Energy & Environmental Economics (E3), Flynn Resources Consulting, Inc., and Hanover Strategy Advisors, LLC.



Staff Report – Item 6

Item 6: Update on Long-Duration Storage

From: Girish Balachandran, CEO

Prepared by: Andrea Pizano, Board Clerk/Executive Assistant

Date: 9/25/2020

This item will be addressed as an update to the committee from Director of Power Resources Monica Padilla.