

PUBLIC REVIEW DRAFT

Climate Action Plan (CAP 2.0) Advisory Committee
March 20, 2019



- Introduction
- Welcome to our first meeting for reviewing the Draft Climate Action Playbook.

Overview

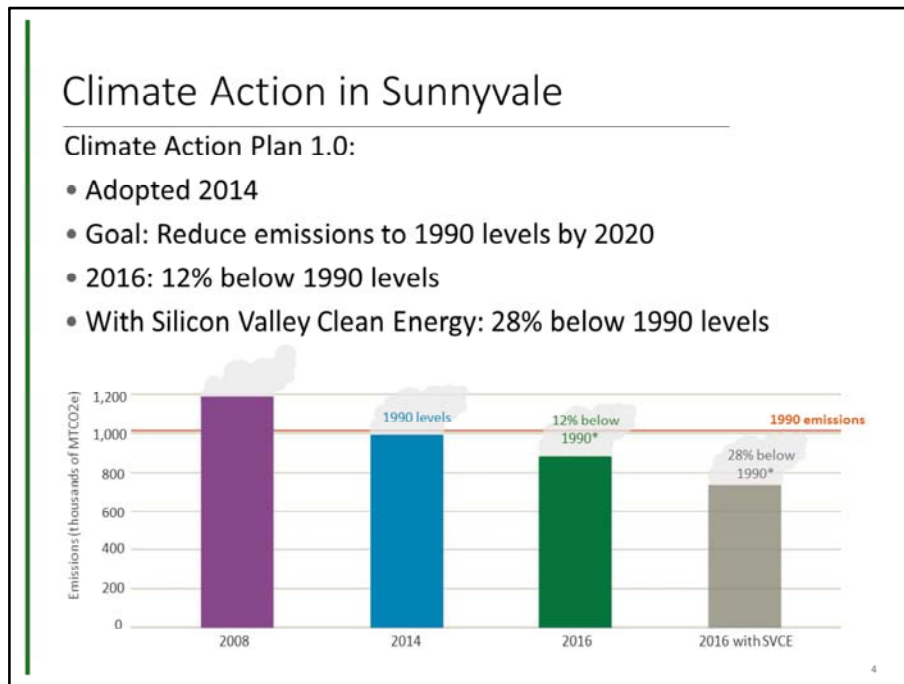
- 1 Climate Action: Building on Success
- 2 The Playing Field
- 3 Inside Our Playbook
- 4 Game Plan 2022: Our Next Moves
- 5 Future Work Planning & Resources
- 6 Community Engagement

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- Today, we'll walk through a quick view of our past success and the Playing Field that lies ahead.
- We'll look at the what's inside the Playbook and what our Game Plan for the next 3 years is. This process will be interactive so we give you information and you can share your feedback as we go along.
- Finally, we'll end with what our plan is to move forward and what our team conditioning or community engagement looks like.

Climate
Action:
Building
on
Success





- A Climate Action Plan (or CAP) is a plan to reduce greenhouse gas (GHG) emissions that contribute to climate change.
- Sunnyvale's first Climate Action Plan (known as CAP 1.0) was adopted in 2014.
- The CAP used 2008 emissions as a baseline, shown by the purple bar in this chart.
- The goal was to establish 1990 levels by 2020. This level was defined as 15% below the 2008 baseline and is depicted by the orange line on the chart.
- As of 2014, Sunnyvale had equaled 1990 levels (as shown by the blue bar).
- As of 2016, Sunnyvale was already 12% below 1990 levels (as shown in the green bar).
- Further, with the establishment of Silicon Valley Clean Energy (or SVCE) – a community choice aggregation agency – more than 97% of Sunnyvale's electric account receive carbon-free electricity. With this shift to clean electricity, we estimate that we are, in fact, at 28% below 1990 levels.

State and Local Policy Landscape

- State targets:
 - ♦ 2020 – Reach 1990 levels (AB 32)
 - ♦ 2030 – 40% below 1990, 40x30 (SB 32)
 - ♦ 2050 – 80% below 1990, 80x50 (S-3-05)
- Council Policy Priority:
Accelerating Climate Action,
Established in 2017
- Council directed update to the CAP



- Meanwhile, while we've been making progress, the State of California has made significant strides through policies and programs to encourage GHG reductions.
- Here's a quick refresher on some of the State's targets for GHG reduction:
 - ❖ For 2020, the State aimed to re-establish 1990 levels of GHG emissions. We've already surpassed this target.
 - ❖ For 2030, the state has set an emissions target of 40% below 1990 levels.
 - ❖ For 2050, the state has set an emissions target of 80% by 50. To date, this target has not been codified as law.
 - ❖ It is important to note that Sunnyvale's CAP 1.0 was designed to help Sunnyvale meet only the 2020 target and did not map out strategies or actions to reach the state's longer term targets.
- In 2016, after the initial implementation of CAP 1.0, the City re-evaluated how to align our climate action plan to match or exceed these interim and long-term state targets of 40% by 2030 and 80% by 2050.
- In 2017, Council adopted "Accelerating Climate Action" as a Policy Priority and directed staff to update the CAP.

ADDITIONAL NOTES (to use if asked questions):

- Since we embarked on developing an updated CAP, in 2018, the State passed SB 100, which requires 100% carbon-free electricity by 2045 (2018).
- In Sep 2018, the Governor issued Exec Order B-55-18 (2018), which establishes a target of reaching carbon neutrality by 2045. This is more ambitious than what our new Climate Action Playbook currently aims for but carbon neutrality is not defined by the EO and it is not yet codified as law. City of Fremont recently set their target to align with this state target.
- Other cities in the Bay Area were establishing ambitious longer term targets that aligned or exceeded those of the state. E.g., Palo Alto adopted an 80x30 target and other cities like Mountain View and Cupertino matched the state's 80x50 target.

A New Era of Climate Action

- Climate Action Plan (2.0) Initiative:
 - Establish emission targets
 - Identify path to reach them
- Formed CAP 2.0 Advisory Committee
- Consultant support for:
 - Technical Analysis
 - Community Engagement
- Result:
 - **Draft Climate Action Playbook**



- Through this Council Policy Priority, was born our Climate Action Plan 2.0 or CAP 2.0 Initiative.
- The goal of CAP 2.0 was to help the City align local emissions targets with state targets and to identify a path to reach them.
- To guide this process, the City convened a CAP 2.0 Advisory Committee (or CAC) to work with staff and consultants in developing a cohesive, ambitious, and realistic framework to achieve the long-term 2050 target.
- The City solicited consultant support from DNV-GL, Fehr & Peers, Acterra, and IDEO to support a technical analysis of what targets were achievable and to engage the community.
- The result of this process is the Draft Climate Action Playbook.

What is a Climate Action Playbook?

A plan to reduce greenhouse gas emissions to address climate change.



- So what is a Climate Action Playbook? Just as a sports playbook identifies a team's winning strategies for achieving success on the field, our Draft Climate Action Playbook contains winning strategies for how to cut back our carbon emissions.
- Our "end game" is to meet the state's target with an 80% reduction below 1990 levels by 2050. This is also known as carbon neutrality.
- On the way to meet that 2050 target, we have set an interim target of a 60% reduction below 1990 levels. This is more ambitious than the State's 2030 target, but we believe early action is critical to setting us on the path to 2050.
- And now I'll turn it over to Ben Butterworth of DNV-GL to walk us through a recap of the technical analysis performed for the CAP.

ADDITIONAL NOTES (in response to questions):

- Carbon neutrality does not mean that the City and community will have no more carbon emissions. Rather, it assumes that the remaining carbon emissions can be sequestered within the city or nearby through projects such as urban forestry, marsh management, or applying compost to our soils.
- 80x50 is universally accepted as carbon neutral across the United States.



- Our Playbook is organized into Strategies, Plays, and Moves.
- Each Play is associated with a quantifiable target to help measure progress.
- Strategies and Plays are the core of the CAP Framework and are intended to remain the same through 2050 as the Playbook is implemented.
- Within the Plays, we have designed “Next Moves,” which are specific actions that both the City and community can implement.
- The Next Moves are designed to be implemented over a shorter time frame only.

Community Contributions

- Created **by** the community **for** the community
- Grassroots community engagement to source ideas
- 165+ attendees at March 2018 ideas workshop
- ~240 ideas total
- Ideas shaped into “next moves” for Playbook

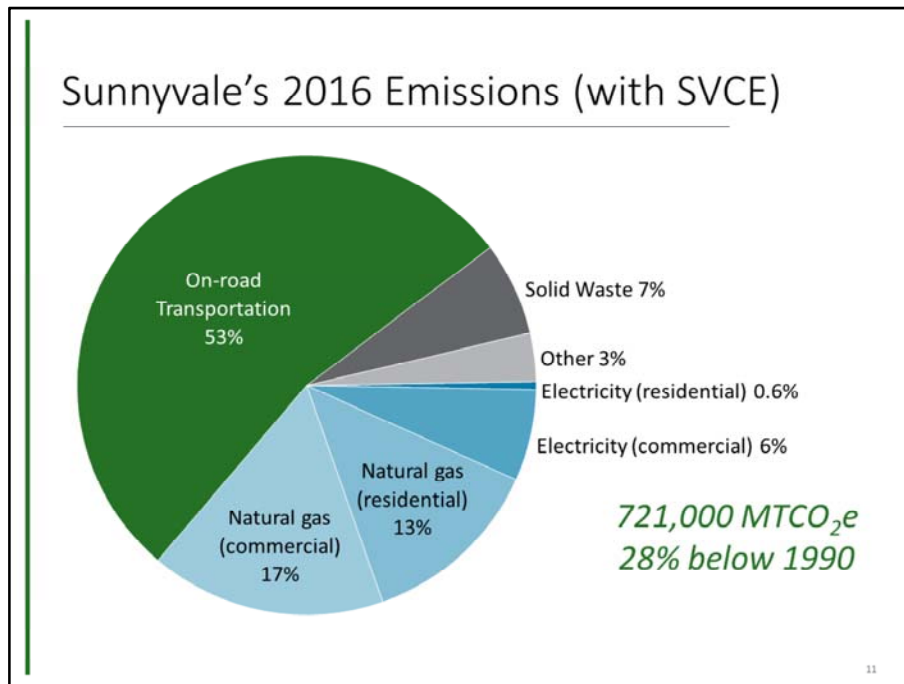


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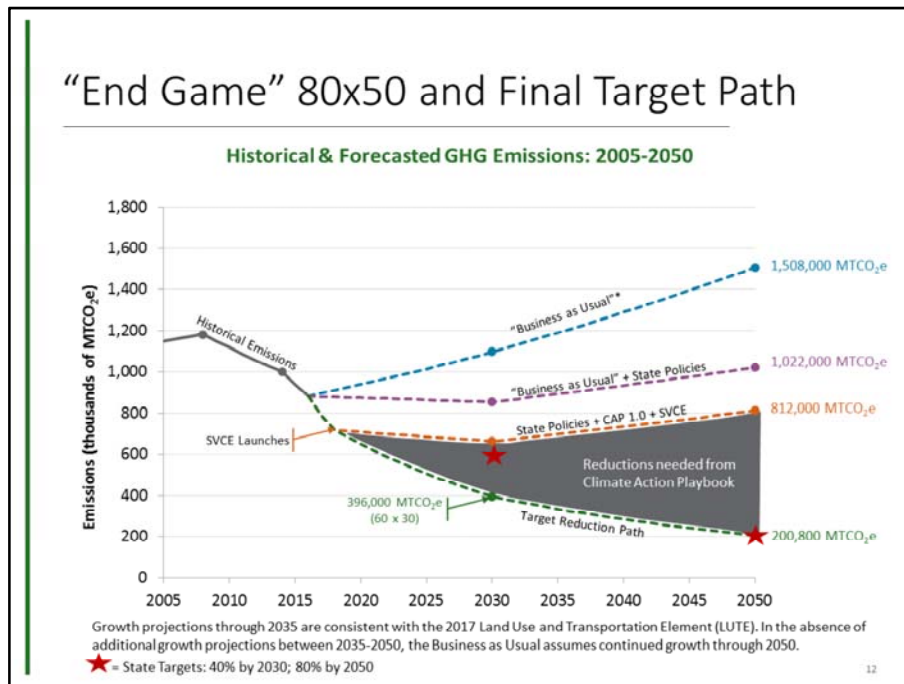
- The updated CAP was intended to be created by the community for the community.
- The City conducted extensive grassroots engagement to source ideas for the Playbook.
- We held a large ideation workshop in March 2018 with more than 165 attendees, many of whom are here today.
- In total, we gathered 240 ideas. The community contributed 140 ideas through our online platform, and these were combined with ideas proposed by staff and the consultant team, as well as carryover actions from CAP 1.0 that staff determined were important to implement.



- The next few slides will outline the interim and long-term targets that the City wanted to achieve, the consultant team's technical analysis of how emissions need to be reduced in each sector to achieve those targets, and the final establishment of the City's targets for the Playbook.



- Earlier, we reviewed that Sunnyvale's community-wide emissions with the implementation of Silicon Valley Energy, are at 28% below 1990 levels.
- That total emissions number of 721,000 MTCO₂e is broken up by sectors as shown in this pie chart.
- As you can see, on-road transportation emissions form the largest share of total emissions at 53%.
- The second largest contributing sectors continues to be energy use. Although the electricity slices of this pie have shrunk to only ~7% of the total, natural gas use contributes to 30% of total community-wide emissions.
- Solid Waste and other sectors, like water, wastewater, and Caltrain emissions make up less than 10% of total emissions.



- Building from this baseline of 2016 emissions, we mapped the path forward to 2030 and 2050 using growth projections for population, housing units, jobs, non-residential building area, and vehicle miles traveled.
- All solid lines represent past or present emissions. All dotted lines show projections of emissions in the future.
- Our Business-as-Usual scenario forecasts, depicted by the blue line, shows how emissions will grow if per capita consumption trends and efficiencies remain at their 2016 level, while all other parameters (like population, jobs, and housing) continue to grow. This scenario represents our “status quo.”
- Our BAU with state policies forecast, depicted by the purple line, shows how emissions will change under the moderating impact of state and federal policies that are currently in place to reduce GHG emissions. Some examples include the state’s requirement to have renewable energy by certain years, and anticipated impact of the state’s Advanced Clean Cars Program.
- In addition to the state’s policies, if we account for CAP 1.0 actions that are ongoing or will be implemented in the future, including SVCE, we anticipate our future emissions would follow the path shown by the orange line.
- We recognize that getting to the 2050 target will mean that we cannot simply rely on meeting the state’s target of 2030. Emissions reduction achieved in the short-term will better position the City to meet its longer term target.

- If we draw a path from 2016 to our 2050 end game, as shown by the dark green line here, we have to exceed the state's target and achieve a 60% reduction by 2030 to make the end game possible.
- The grey shaded area between the orange and green lines depicts the GHG reductions needed from the Climate Action Playbook to reach the State's 2050 target or carbon neutrality.

ADDITIONAL NOTES (to use if asked questions):

- BAU forecast utilizes Sunnyvale-specific growth projections from the City's Land Use and Transportation Element (LUTE), adopted in 2017. These growth projections are available through 2035 when the City is projected to achieve complete buildout. **This BAU forecast, however, assumes continued growth in the absence of future projections between 2035-2050.**

Scenario Analysis (“Wedge Tool”)

- Determines emissions reductions needed from these sectors:
 - ♦ Natural Gas
 - ♦ Electricity
 - ♦ Transportation
 - ♦ Waste
- How the tool works:
 - ♦ Factors in emissions forecast – (impact of State policies + CAP 1.0 measures)
 - ♦ Accounts for projected “business as usual” adoption of future technologies
 - ♦ Sector-by-sector targets adjusted to achieve overall target

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- To estimate how emissions reductions can be achieved from the different sector, the consultant team used the DNV GL Climate Tool, also called the Scenario Analysis Tool or Wedge Tool.
- The tool helps to determine the emissions reductions needed from four main sectors, including natural gas, electricity, transportation, and waste.
- The tool factors in the emissions forecast and accounts for the impact of state policies and CAP 1.0 measures.
- It maps out the path to get to the state’s 40x30 and 80x50 target and allows one to dial up emissions reductions in one sector while weighing how those emissions might affect other sectors and the overall reduction target.
- It also accounts for the projected adoption rates of future technologies, like electric vehicles.
- The tool includes sector-by-sector targets which are adjusted to achieve the overall GHG reduction target.
- If emissions in one sector are allowed to increase, then emissions in another sector need to be dialed down to balance that increase. Therefore, the tool takes a holistic approach to assessing communitywide emissions targets.

Transportation: VMT from TrendLab+

- VMT estimate produced by TrendLab+ tool
- Use-defined “desired” future trends for 16 variables, such as:

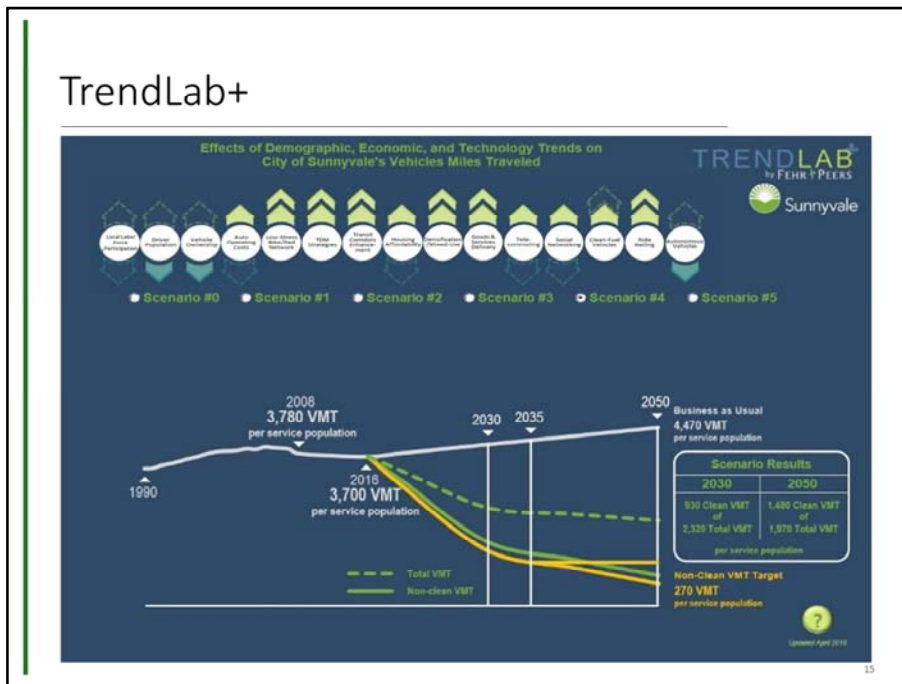


- Outputs from TrendLab+:
 - VMT per service population in 2030 and 2050
 - “Clean” vs. “Non-Clean” VMT per service population
- VMT estimates from TrendLab+ plugged into Wedge Tool

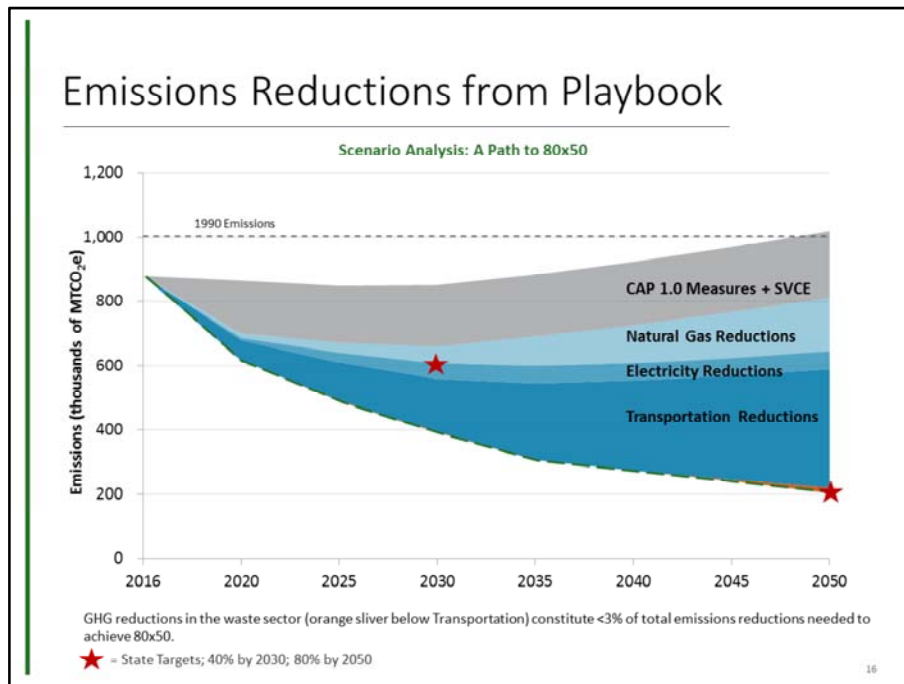
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- The Transportation sector is treated differently from other sectors in the Wedge Tool. For this, we used the TrendLab+ tool, which produces a VMT estimate for the target years.
- TrendLab+ evaluates 16 trends using user-defined input of their preferences for each of those trends. These 16 trends are shown in the screenshot here.
- For example, if a user may define his/her preference that the housing affordability go “up” or “down” in the future. Similarly, for certain trends, a user may define whether he/she prefers a particular trend to go up by twice as much (or “double up”) in the future vs. “up” vs. “down”, as can be seen with densification/mixed-use.
- The output of the TrendLab+ tool are VMT per service population numbers for target years.
- In addition, the tool also provides how much of the VMT comes from “clean” or “zero-emission” vehicles vs. from GHG-producing vehicles.
- Resultant VMT is plugged into the Wedge Tool.
- Leverages VMT outputs from TrendLab+ to understand relationship between VMT reduction target + overall emissions target

TrendLab+

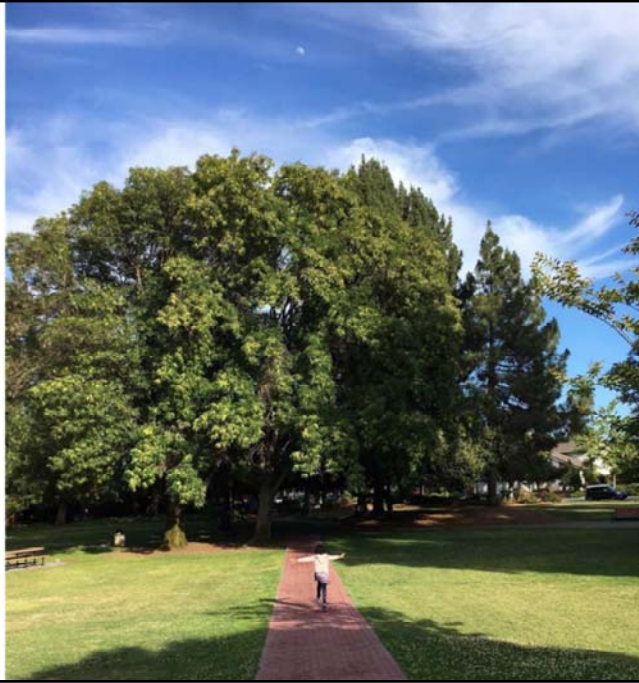


- This screenshot of the TrendLab+ tool shows the final trends that were selected to achieve the VMT projection.
- With those trends under consideration, the tool predicts the total VMT (dotted green line) we need to achieve a target VMT of 2,320 per service population by 2030 and 1,970 per service population by 2050.
- The BAU VMT is the solid white line at the top.
- The solid green line shows the portion of VMT from fossil fuel powered vehicles.
- The difference between the dotted green line and the solid green lines is VMT from clean (zero-emission) vehicles.
- The diverging yellow lines have to do with the future service population. The lower line is the goal if the service population were to continue to increase at the same rate as the 2035 LUTE. While the 'flat' line is the goal if the city of Sunnyvale service population were not to change after 2035. These two lines were added to acknowledge that the service population growth to 2050 could vary.



- The final result is a wedge chart, as shown here, that highlights the extent of GHG reductions needed from each sector by the target years. Based on this, more detailed strategies and actions can be defined for implementation.

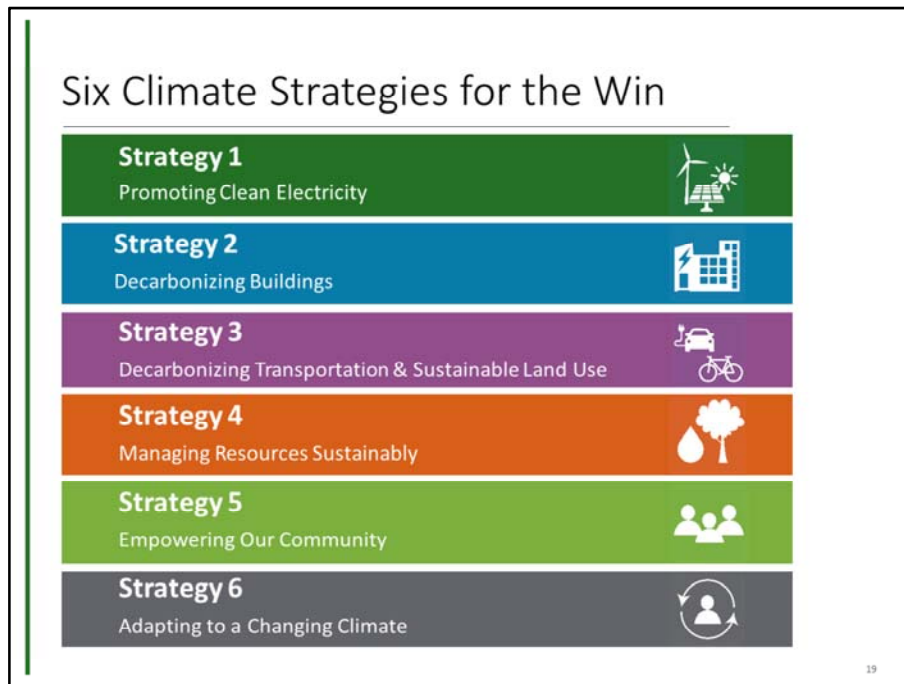
Inside
Our
Playbook



How Our Playbook is Organized



- Our Playbook is organized into Strategies, Plays, and Moves.
- Each Play is associated with a quantifiable target to help measure progress.
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- The six Strategies in our Playbook are listed here. They are also listed on the inside of the brochure you all have.
- These are designed to address the largest emissions sources per our GHG inventory, as you can see from Strategies 1, 2, 3, and 4.
- We also recognize that City implemented programs alone are not adequate to achieve the significant GHG reductions we need, so we want to enable our community to take steps to reduce local GHG emissions per Strategy 5.
- And lastly, we would be remiss in attempting to address climate change without working on adaptation and building community resilience, per Strategy 6.

Strategy 1: Promoting Clean Electricity



- Builds on success of SVCE to enhance access to GHG-free electricity
- Forms the basis for decarbonizing buildings and transportation

Plays		Targets
Play 1.1	Promote 100% clean electricity	2030: 100% participation in clean electricity 2050: 100% participation in clean electricity
Play 1.2	Increase distributed solar photovoltaics and storage	2030: 3% of load from local solar 2050: 5% of load from local solar

Strategy 2: Decarbonizing Buildings



- With clean electricity, focus shifts to transition away from natural gas
- Continues emphasis on improving energy efficiency
- Builds on award-winning Green Building Program

Plays		Targets
Play 2.1	Reduce energy consumption in existing buildings	2030: 5% of existing homes and businesses receive deep energy retrofit 2050: 30% of existing homes and businesses receive deep energy retrofit
Play 2.2	Support electrification of existing buildings	2030: 20% of homes and businesses completely electrified 2050: 50% of homes and businesses completely electrified
Play 2.3	Zero Net Energy and all-electric new construction	2030: 100% Zero Net Energy new buildings 2050: 100% all-electric new buildings

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Strategy 3: Decarbonizing Transportation & Sustainable Land Use



- Transportation now the largest source of Sunnyvale's emissions
- Leverage infrastructure and technology alternatives to single-occupancy fossil fuel vehicles
- Balance land use to address vehicle miles traveled
- Promote electric vehicles and regional transit options

Plays		Targets
Play 3.1	Balance land use supply and enhance urban form	2030: 37% reduction in VMT per service population [Achieve 2,320 VMT per service population]
Play 3.2	Increase transportation options and support shared mobility	2050: 47% reduction in VMT per service population [Achieve 1,970 VMT per service population]
Play 3.3	Increase zero-emission vehicles	2030: 20% of all vehicles on road are zero-emission vehicles 2050: 75% of all vehicles on road are zero-emission vehicles

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Strategy 4: Managing Resources Sustainably



- Builds on water conservation and waste diversion success
- Increases local capacity for natural carbon sequestration
- Enhances awareness of upstream impacts of consumption

Plays		Targets
Play 4.1	Achieve zero waste goals	2030: 90% of all generated waste is diverted from landfills 2050: 90% of all generated waste is diverted from landfills
Play 4.2	Ensure resilience of water supply	Targets will be defined as per state requirement
Play 4.3	Enhance natural carbon sequestration capacity	Supports broader net carbon reductions
Play 4.4	Shift to low carbon food	Supports broader emissions reductions

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Strategy 5: Empowering Our Community



- Behavior change is key to achieving GHG reductions beyond those achieved by policy or new technology
- Supports the community by facilitating behavior change
- Keeps the community informed about climate action progress

Plays		Targets
Play 5.1	Enhance community awareness and engagement	Supports all other Plays
Play 5.2	Track and share data and tools	Supports all other Plays

Strategy 6: Adapting to a Changing Climate



- Simultaneous with climate mitigation
- Strengthens community resiliency and emergency preparedness; builds better social support systems
- Assesses vulnerability to inform more targeted adaptation actions in the future
- Hinges on collaboration with partners to enhance regional solutions

Plays

- | | |
|----------|---|
| Play 6.1 | Assess climate vulnerabilities for Sunnyvale |
| Play 6.2 | Protect shoreline area from sea level rise and coastal flooding |
| Play 6.3 | Strengthen community resiliency |

- Do we have the right Strategies and Plays?
- Do we have the right targets?
- Did we miss anything?

Discussion



Game
Plan
2022:
Our Next
Moves



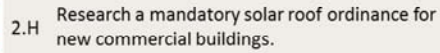
Game Plan: Our “Next Moves”

- Moves are actions to focus on for next 3 years
 - Moves sourced from community ideas
 - Moves are **not** designed to achieve Play-level targets, but intended to take steps towards them
 - Moves implemented by different departments
 - Each Move has carbon impact and co-benefits
- | | |
|---|---|
|  Minimal potential |  Local Environmental Quality |
|  Some potential |  Health & Livability |
|  Significant potential |  Community Savings |
|  Maximum potential |  Partnerships |

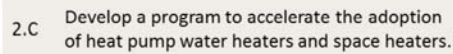
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- Our Game Plan is the set of specific actions called “Next Moves” that we plan to implement in the next 3 years i.e., through Fiscal Year 2022.
- It is important to note that the Moves outlined in our Playbook are not designed to achieve targets reviewed earlier in this presentation. Those targets are set at the Play-level and are intended to carry us through 2030 and 2050. The Moves will enable us to make progress towards those targets.
- Moves will primarily be implemented by ESD, DPW, and CDD, in partnership with all other city departments. The Playbook is a cohesive plan that will integrate emissions reductions across city operations.
- The Next Moves are listed in the large handout you all have today.
- In the Playbook, we identified the relative carbon impact of each move, ranging from minimal potential for Moves that are mostly supportive in nature, to maximum potential, for Moves that will yield significant GHG reductions.




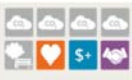

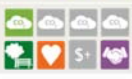




- Research viability of new ideas



3.C Enhance City Transportation Demand Management (TDM) program implementation and monitoring to facilitate further reductions in single-occupant automobile trips, citywide.



3.J Develop a Community Electric Vehicle Readiness and Infrastructure Plan.

Moves and What They Accomplish				
• Pilot new programs				
	5.A	Pilot a targeted grassroots community engagement strategy (e.g., Cool Blocks Program) to create stronger connections between neighbors to advance climate action and emergency preparedness.	ESD	
• Leverage existing partnerships and build new ones				
	6.C	Collaborate with Valley Water to advance a shoreline protection project with the US Army Corps of Engineers or other partners.	DPS	
	4.I	Work with large businesses to identify best practices for implementing local food gardens.	ESD OCM	
• Provide education and progress reports to facilitate behavior change				
	5.C	Create a stronger social media and web presence for Sunnyvale climate action.	ESD	
	5.C	Publish annual greenhouse gas (GHG) inventory.	ESD	

- 80 x 50 does not mean no more carbon emissions. Rather it refers to not emitting more carbon than can be stored in organic materials such as trees, landscapes, and soils - a process called carbon sequestration. In the context of reducing emissions, the target of 80x50 is generally considered to be aligned with carbon neutrality, with the remaining emissions addressed through sequestration.

More examples of Moves in these three categories:

- Research
 - 3.D Identify areas that are most appropriate for parking strategies that discourage vehicle use, such as pricing, time limits, and supply reductions
 - 4.J Explore feasibility of implementing local food gardens at major businesses
 - 5.B Evaluate and pilot a program for youth engagement on climate
- Implementations
 - 2.F Continue to incentivize efficient and high performance buildings through the Green Building Program updates
 - 4.H Implement the City's Urban Forestry Management Plan
 - 5.F Implement the Sustainability Speakers Series
- Partnership

- 4.F Partner with Santa Clara Valley Water District to evaluate opportunities to expand water reuse
- 5.E Build relationships with largest employers to collaborate on climate action
- 6.C Collaborate with Water District to advance a shoreline protection project with the US Army Corps of Engineers or other partners

- 10 green dots + 5 red dots

● What Moves are you most excited about?

● What Moves are you most concerned about?

Dot Exercise



- Was any move missing?
- Do any of the Moves require significant rewording?

Discussion



- With that, we can begin our dot exercise. You each have 10 blue dots and 5 yellow dots. Use the blue dots next to moves you are most enthusiastic about and green dots next to moves you are concerned about. Then we will regroup for discussion.

Future
Work
Planning
and
Resources



Implementation Plan for Playbook

- Game Plan 2022 implemented over 3 years
- Game Plan will be updated every 5 years
- Reporting on each cycle informs next Game Plan
- Why do it this way?
 - ♦ Changing regulatory context
 - ♦ Evolving technologies
 - ♦ Changing behavior trends and needs of our community

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- We have specifically designed the Playbook to be an overarching framework that can take us through 2050. However, we intend for the Game Plan to be dynamic and evolve with every implementation.
- We do it this way because:
 - Federal, state and local policies are constantly evolving. In California, environmental policies have become increasingly more progressive. So we want to develop Moves in future years that account and build on those policies.
 - We recognize that the technological landscape is also evolving. Our CAP 1.0 had an action to encourage adoption of neighborhood electric vehicles. 5 years after it was adopted, we have virtually no neighborhood electric vehicles. We want our Game Plan to evolve to meet and promote newer technologies.
 - Community behaviors and how we consume information and act on it is also changing rapidly. For example, many people who might previously be inclined to drive now use ridesharing services because they are more convenient. We want the Game Plan to match and keep abreast of these changing trends.

Commitment to Reporting

- Annual reporting:
 - ♦ Implement improvements for climate data performance tracking
 - ♦ Publish annual greenhouse gas (GHG) inventory



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- Our Playbook also demonstrates the City's commitment to reporting data back to the community on how we are making progress.
- We have, for this reason, included moves to implement improvements to tracking our climate action data and to publishing our GHG inventory annually.

Resource Needs

- Ongoing:
 - ♦ 3 additional staff
 - ♦ Total = \$1.47M (~\$500K per year)
- One-Time:
 - ♦ Consultant services
 - ♦ Temporary staffing
 - ♦ Infrastructure needs
 - ♦ Total = \$1.39M
- Resources refined and finalized as a part of the annual budget process, for Council consideration



- How do we fund the Next Moves proposed in our Game Plan?
- We know that accomplishing our Game Plan will require resources.
- We plan to request both ongoing resources as well as one-time resources, which will not repeat in subsequent cycles.
- Our resource request will be finalized as a part of the City's annual budget development process in June 2019.

Funding Opportunities to Explore

- Partnerships and collaborations (e.g., Silicon Valley Clean Energy)
- Develop differential utility use tax (UUT) to incentivize electrification
- Carbon impact fees for development projects
- User fees for selected activities and services
- Paid parking in selected locations
- Transportation impact fees



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- Funding for future Game Plans will need to leverage additional long-term strategies, some of which are listed here.
- These are **options** that the City may choose from.

Community
Engagement



Schedule

- Public review – March 2019 through April 2019
- Council Study Session – March 26, 2019
- Board/Commission recommendations – May 2019
- Playbook to Council for adoption – June 2019



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- Public review will continue between March and April.
- On March 26, we will have a Council Study Session. You are welcome to attend!
- We will then incorporate community and council feedback to revise the Playbook.
- In May, we will take the revised Playbook to 3 Commissions: Planning, Sustainability, Bike and Ped.
- In June, we plan to take the Playbook to Council for adoption.

