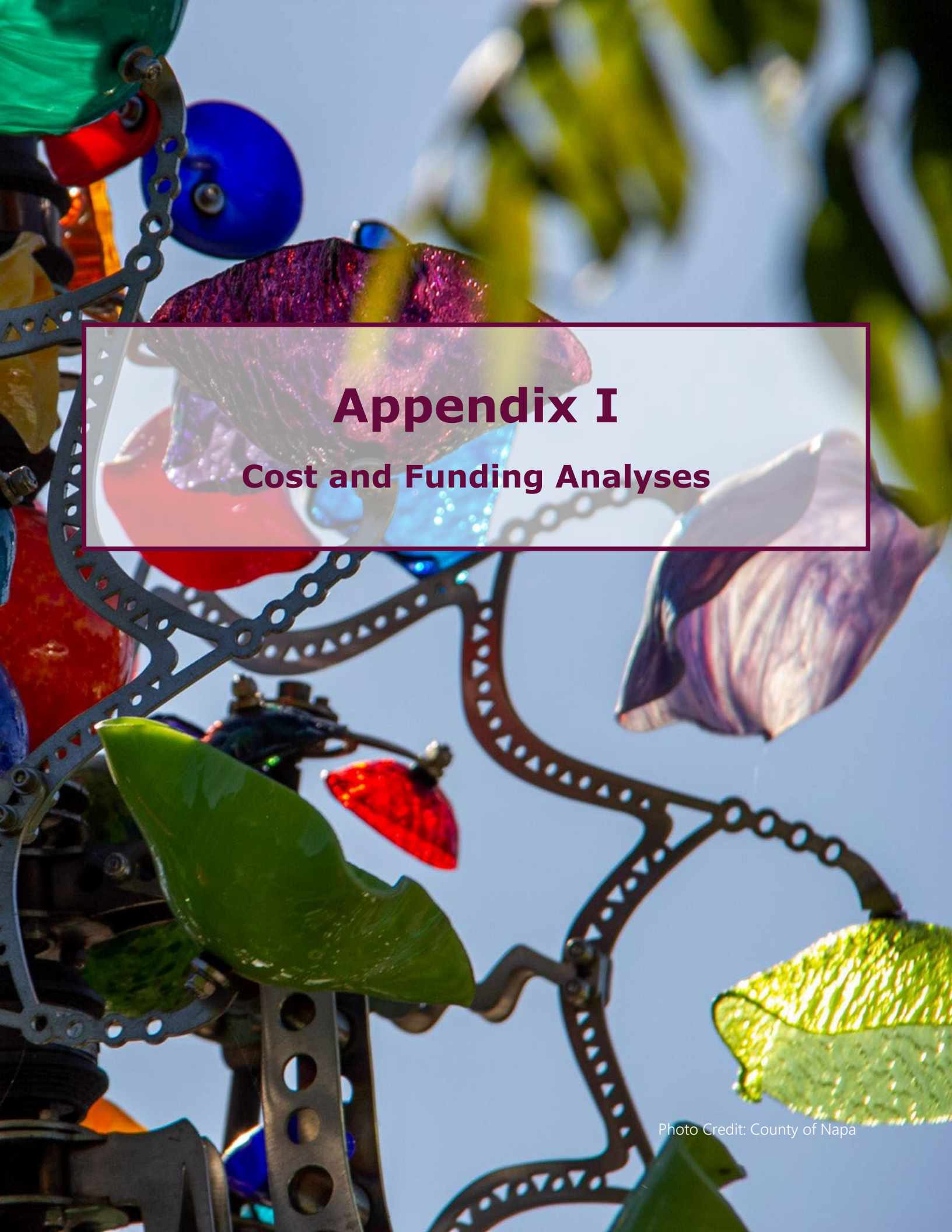

Appendix I

Cost and Funding Analyses

Photo Credit: County of Napa

1 INTRODUCTION

This appendix summarizes the findings of the **preliminary cost assessment** prepared by Jacobs for the RCAAP as well as the **funding and financing assessment** prepared by Economic & Planning Systems (EPS). The original works are included as **Attachments I-1 and I-2**, respectively, to this appendix.

- The **preliminary cost assessment** estimates and classifies Napa County Jurisdictions' implementation costs for a priority subset of proposed measures included in the RCAAP, including nine GHG reduction measures and 10 climate adaptation actions. Importantly, the scope of analysis did not include cost estimates for all measures in the RCAAP and does not represent a complete cost assessment for the entirety of the plan. The Napa County Jurisdictions collectively have a responsibility to successfully implement the RCAAP and as such, the Cost Assessment includes total costs for implementation of the selected measures as presented in the RCAAP, and costs are not estimated individually for any one jurisdiction. No cost-sharing analysis was included in the scope of the Cost Assessment. The Cost Assessment is intended to estimate Napa County Jurisdictions' municipal expenses necessary to implement the selected nine GHG reduction measures and 10 adaptation actions over a 20-year horizon (i.e., 2025-2045). Some of the measures involve one-time activities such as developing a program or plan, or adoption of an ordinance. Others are ongoing activities, such as structure hardening or certain infrastructure projects that have a longer timeframe. However, the scope of the analysis did not include quantifying potential cost savings to the Napa County Jurisdictions (e.g., through reduced municipal utility bills associated with more efficient buildings and vehicles), nor does it include potential costs or savings to the community (e.g., reduced utility bills through home electrification or fuel costs through vehicle electrification).
- The **funding and financing options assessment** offers insights into potential funding and financing options to support implementation of the priority subset of GHG reduction and climate adaptation measures in the RCAAP, based on the estimated costs identified in the Cost Assessment. It also provides a review of potential funding sources that could be used by the Napa County Jurisdictions for financing the implementation of these actions, along with recommended steps for developing a more detailed implementation and funding strategy.

2 PRELIMINARY COST ASSESSMENT

Jacobs prepared a preliminary cost assessment to estimate the incremental up-front costs that would be incurred by Napa County Jurisdictions in implementing the 19 selected GHG reduction measures and climate adaptation actions. The preliminary cost assessment provides transparency in the potential implementation costs of specific RCAAP policy decisions and may help prioritize implementing actions, based on the availability of funding and financing options. The 19 GHG reduction and climate adaptation measures and implementing actions selected for cost assessment and presented in the proposed RCAAP are currently in draft form, and as such, the cost analysis presented here is preliminary. Once the GHG reduction and climate adaptation

measures and actions in the RCAAP are finalized and adopted, implementation cost assumptions can be further refined to provide more detail and a more accurate assessment.

2.1 NAPA COUNTY JURISDICTION COST ANALYSIS FRAMEWORK AND METHODOLOGY

- The inputs of the cost assessment in **Table I.1 and Table I.2** fall within three categories described below: labor costs, capital costs, and other costs (e.g., consultants, rebates, or incentives).
  - Labor costs: correspond to Napa County Jurisdictions' staff. These are expressed in terms of a fraction of one average full-time equivalent (FTE) staff position per year over the 20 years from the FY 2025-2026 to the FY 2044-2045 (inclusive of both). For example, a value of 1 FTE per year could mean one dedicated staff member working full-time on a measure over the twenty-year period, or it could mean two staff members working half-time over the same period. For this analysis, it was assumed that 1 FTE would cost the Napa County Jurisdictions $280,000 per year (including wages, salary, and benefits). This value was derived using publicly available salary data and represents an average across project management, environmental specialist and engineering positions. This represents an approximation; the exact positions and salaries that would need to be created to implement the RCAAP measures are beyond the scope of this analysis.
  - Capital costs: correspond to physical assets and equipment with a such as electric vehicles and chargers; and
  - Other costs: correspond to non-capital expenses (e.g., rebates, assessments, consultants, and outreach materials).
- The estimated costs presented in the preliminary cost assessment are considered Class 4 order-of-magnitude with an accuracy range of -30% to +50% of the actual cost, according to the Recommended Practice No. 107R-19: Cost Estimate Classification System - As Applied in Engineering, Procurement, and Construction for the Environmental Remediation Industries (AACE International 2021). The cost assessment was prepared to provide guidance in project evaluation and implementation from the information available at the time the assessment was prepared. The final costs of the proposed measures will depend on actual labor, material costs, and competitive variable factors. Because of this, project feasibility and funding needs must be carefully reviewed prior to making specific decisions to help ensure proper project evaluation and adequate funding.
- Programmatic costs (e.g., unit cost, rebate values, full-time equivalent staff) are estimated based on inputs derived from coordination with County of Napa and City of Napa staff, and assumptions are included as noted in each measure.
- The selected GHG measures were each estimated individually as standalone programs, and all relevant implementing actions under each measure were assumed, or at least considered, in the analysis.

- The selected climate adaptation measures were estimated individually as standalone programs, based on a specific implementing action included underneath the selected measure that would have the most impact and potential for cost estimation. Not all implementing actions were assumed in the cost assessment for adaptation measures, due to the broad range of implementing actions defined under each measure.
- While there may be potential for efficiency in "bundling" measures or implementing actions that are similar across measures together, no such bundling was assumed in the analysis.
- Periodic costs, such as program updates occurring every 3 or 5 years, are annualized for cost estimation purposes. These costs can be allocated to specific years and discounted accordingly as more details of timing and precise implementation are defined.
- Estimates include new projected implementation costs expected to be realized by Napa County Jurisdictions. Funding from other sources required for successful program implementation is not included unless otherwise noted.
- An annual discount rate of 2.2% is used for all estimates unless otherwise noted. This is the 20-year real interest rate on US treasury notes and bonds for the 2025 calendar year per OMB Circular No. A-94.
- The estimated costs are for a select number of measures and actions and are considered preliminary and do not represent the full scope of costs to be considered in the RCAAP in its draft form.

The cost analysis considers only the incremental up-front costs and annual costs through FY 2045 to the Napa County Jurisdictions for RCAAP implementation. This analysis does not consider discount rates. The cost analysis does not include costs or cost savings for the community (such as for residents and businesses). Many measures are likely to result in net cost savings to the community or Napa County Jurisdictions, such as energy efficiency retrofits per measure BE-1 which would result in utility bill savings or fueling vehicles with electricity instead of gasoline per measure TR-3 which would reduce fuel costs.

In many cases, GHG reduction and climate adaptation measures and associated implementing actions call for the continuation or expansion of programs or policies that already exist, and as such action AG-6 to accelerate woodland and forest habitat restoration and stewardship in rural areas. Existing and expanded programs often incur less upfront costs to the Napa County Jurisdictions because they are supported by existing resources. Additionally, some of the implementation actions of the RCAAP can be completed within the current staff capacity. Cost savings, grant opportunities, and other funding and financing mechanisms that can lower upfront costs were not considered in the cost assessment.

2.2 PRELIMINARY COST ASSESSMENT RESULTS

The detailed results of the preliminary cost assessment, included in **Attachment I-1** to this appendix can be summarized as follows:

- **If all 19 measures selected for analysis were fully implemented, total implementation costs would be approximately $1.1 billion over 20 years**, or approximately $57 million per year.
  - Of this total, approximately 85 percent would be for rebates, incentives or other program costs excluding labor or capital costs incurred by local, regional, or other agencies; eight percent for capital costs; and seven percent would be for labor or administrative costs incurred by local agencies.
- **For the nine selected GHG reduction measures only, full implementation would cost approximately $772 million over 20 years.**
  - Over 90 percent of these estimated costs are associated with rebates, incentives, or other program costs.
  - Measure BE-1 has the highest estimated cost of the 19 measures included in the cost assessment. It is also the highest in the Building Energy sector, at $448 million. Measure BE-1 requires Napa County Jurisdictions to develop and implement a comprehensive energy retrofit program to transition existing residential and non-residential buildings to net zero carbon with a target of 25% of existing buildings by 2030 and 100% by 2045. This action is spread out over 20 years with 75% of costs in the mid- to long-term (i.e., 2030-2045). The estimated cost of residential and commercial rebates or other incentives under this measure could cost over $400 million over 20 years.
  - Measure AG-1 has the highest estimated cost in the Agriculture and Open Space sector in the GHG reduction, at $205 million. Measure AG-1 focuses on reducing fossil fuel consumption in field equipment. The program assumptions included the cost of incentives to replace equipment with solar and bio-fueled equipment and are spread out over the 20 years of the cost analysis.
  - Measure SW-1 has the highest estimated cost in the Solid Waste sector, at $18 million, to increase diversion of solid waste to achieve at least 80% diversion from landfills by 2035. This action has more upfront costs in the near- to mid-term because the action goal is 2035; however, in later years, there are costs associated with labor to manage and enforce the Reusable Food Ware and Waste Reduction Ordinance as well as evaluate the effectiveness of the commercial food waste diversion program, for example.

- **For the 10 selected climate adaptation measures only, full implementation would cost approximately $359 million over 20 years.**
  - Approximately 66 percent of these estimated costs are associated with rebates, incentives, or other program costs, while 28 percent would be for capital costs.
  - Action Flood-2.3 has the highest estimated cost of the Flood strategies quantified, at $123 million to invest in and enhance the capacity of stormwater infrastructure to manage high-intensity rainfall events as well as continue implementing the Phase II Small Municipal Separate Storm Sewer System (MS4) Permit. This is an action that has costs over the entire 20 years of the cost analysis; however, the first five years of this action's implementation are 70% of its total cost due to required capital improvement projects such as sewer capacity upgrades.
  - Action Fire-5.2 has the highest estimated cost of the Fire strategies quantified, at $117 million to implement selective thinning and pruning to reduce tree density and remove infested or weakened trees, making forests less susceptible to beetle outbreaks. This is an ongoing action that has fairly even costs over the entire 20 years of the cost analysis.
  - Action Temp-2.5, in the Temperature strategy, has estimated costs of $24 million over six years to enhance shading and reduce heat island effects for active commuters by increasing greenery along bike paths, sidewalks, pathways and streets and then has ongoing maintenance costs over the following 14-year period.

Table I.2, below, presents a summary of the incremental costs that would be incurred by the Napa County Jurisdictions or others in implementing the nine selected GHG reduction measures and **Table I.1** summarizes the incremental cost that would be incurred by the Napa County Jurisdictions in implementing the 10 selected climate adaptation actions. These estimated costs are based on the preliminary cost assessment prepared by Jacobs and are subject to change based on potential revisions to RCAAP measures, market conditions, specific details further defined for implementation programs following RCAAP adoption by Napa County Jurisdictions, the availability and cost of zero-emissions technology, and other factors. Detailed outputs from the preliminary cost assessment prepared by Jacobs are included in **Attachment I-1**.

Table I.1 Implementation Costs (FY 2025/26-2044/45) for Selected Climate Adaptation Actions

Measure & RCAAP Action No.	Strategy	RCAAP Action	Assumed Implementation Duration (Yrs)	Net Present Value	Total Cost (Not Discounted)
All-3.2	**Improve the County and its jurisdictions' overall climate resilience.**	Reduce wildfire risk in existing and new residential and commercial developments by requiring owners/developers to create and maintain defensible space and fire breaks; harden structures with fire-resistant materials; or other appropriate wildfire risk reduction measures.	20	$69,340,000	$86,370,000
All-5.1	**Improve the County and its jurisdictions' overall climate resilience.**	Revise maintenance protocols for transportation systems to integrate considerations of climate vulnerabilities, such as reducing fuel load regularly for wildfire events and inspecting stormwater collection systems regularly for flooding events. Ensure sufficient funding and capacity to routinely conduct maintenance measures.	3	$930,000	$960,000
All-7.2	**Improve the County and its jurisdictions' overall climate resilience.**	Coordinate with the Napa County Groundwater Sustainability Agency (NCGSA) to fully implement the Interconnected Surface Water and Groundwater Dependent Ecosystems Workplan: Napa Valley Subbasin (ISW/GDE Workplan).	12	$2,540,000	$2,800,000
All-8.3	**Improve the County and its jurisdictions' overall climate resilience.**	Identify potential locations throughout the county for siting new community resilience centers or "resilience hubs," either through new construction or repurposing of existing facilities.	2	$1,000,000	$1,030,000
Fire-5.1	**Prepare for and adapt to increased wildfire risk.**	Set up a network of monitoring stations to detect beetle infestations early. Utilize satellite imagery and drone technology to monitor large forest areas for signs of beetle activity and tree health.	20	$1,920,000	$2,360,000
Fire-5.2	**Prepare for and adapt to increased wildfire risk.**	Implement selective thinning and pruning to reduce tree density and remove infested or weakened trees, making forests less susceptible to beetle outbreaks.	20	$94,180,000	$117,420,000
Temp-2.5	**Prepare for increased temperatures and more frequent extreme heat events.**	Enhance shading and reduce heat island effects for active commuters by increasing greenery along bike paths, sidewalks, pathways and streets.	6	$21,500,000	$24,210,000

Measure & RCAAP Action No.	Strategy	RCAAP Action	Assumed Implementation Duration (Yrs)	Net Present Value	Total Cost (Not Discounted)
Flood-2.3	**Prepare for more frequent extreme precipitation and flooding events, combined with sea level rise threat.**	Invest in and enhance the capacity of stormwater infrastructure to manage high-intensity rainfall events. Continue implementing the Phase II Small MS4 Permit.	20	$108,290,000	$122,520,000
Drought-3.2	**Prepare for more frequent drought events and enhance the region's overall water supply resilience.**	Work with local water providers to adopt municipal codes to enforce resiliency standards for water-related infrastructure for all future development. Municipal codes may include but are not limited to standards related to the elevation of electrical generators and/or tanks and containers of hazardous materials, increased capacity of water storage tanks, and improved deployment of backflow preventers to impede contamination of drinking water following an extreme storms or related weather events.	20	$1,120,000	$1,360,000
Energy-4.2	**Improve the region's energy grid resilience.**	Partner with MCE and explore the feasibility of microgrid installations and/or virtual power plant opportunities at local government agency-owned facilities, school or college campuses, hospital campuses, or other types of facilities where the use of microgrids or similar systems would be cost-effective and appropriate for supporting both energy grid and community resilience.	1	$380,000	$390,000

Notes: Cost estimates shown in this table are for selected subset of proposed climate adaptation measures in the RCAAP and do not represent a complete cost estimate for all proposed climate adaptation measures. Measures are each estimated individually as standalone programs, with the exception of Fire-5.1 and Fire-5.2. There is potential for efficiency in bundling the Measures together.

Costs vary by measure because some measures are estimated as a multi-year program with up to 20 years of implementation, while other measures are assumed to only include a study or assessment. See Results Considerations in each tab of the quantification spreadsheets for further details.

Estimates include new projected costs expected to be realized by Napa County. Funding from other sources or required for successful program implementation is not included unless otherwise noted. The costs provided are for implementation by Napa County unless otherwise noted.

The costs included here are not an offer for construction and/or project execution. The costs presented in this estimate are considered Class 5 with an accuracy range of -50% to +100% of the actual cost, according to the Recommended Practice No. 107R-19: Cost Estimate Classification System. As Applied in Engineering,

Procurement and Construction for the Environmental Remediation Industries (AACE International 2021). The cost estimate has been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project will depend on actual labor, material costs, and competitive variable factors. Because of this, project feasibility and funding needs must be carefully reviewed prior to making specific decisions to help ensure proper project evaluation and adequate funding.

Source: **Compiled by Jacobs in 2025**.

Table I.2 Implementation Costs (FY 2025/26-2044/45) for Selected GHG Reduction Measures

Measure	Emissions Sector	Strategy	Measure	Net Present Value	Total Cost (Not Discounted)
BE-1	**Building Energy**	**Energy Efficiency and Electrification**	Develop a comprehensive energy retrofit program to transition existing residential and non-residential buildings to net zero carbon with a target of 25 percent of existing buildings by 2030 and 100 percent by 2045.	$359,870,000	$448,380,000
BE-5	**Building Energy**	**Zero Carbon Development**	Develop and adopt a Zero-Carbon Buildings Reach Code for New Construction.	$1,060,000	$1,330,000
TR-3	**On-Road Transportation**	**Low and Zero Emissions Vehicles**	Increase access to Zero Emissions Vehicle (ZEV) Fueling Infrastructure.	$350,000	$380,000
TR-11	**On-Road Transportation**	**Transportation Demand Management (TDM)**	Expand Individual Trip TDM Programs.	$2,750,000	$3,340,000
OF-3	**Off-Road Transportation**	**Electrification and Clean Alternatives**	Zero Carbon Construction Equipment – Community.	$150,000	$180,000
SW-1	**Solid Waste**	**Zero Waste**	Increase diversion of solid waste to achieve >80% diversion from landfills by 2035.	$14,890,000	$18,250,000
WW-1	**Water/ Wastewater**	**Waste Water Treatment**	Reduce fugitive methane emissions from Wastewater Treatment Plants (WWTPs).	$1,890,000	$2,390,000
AG-1	**Agriculture and Open Space**	**Reduce GHGs from Agricultural Equipment**	Reduce fossil fuel consumption in field equipment.	$155,180,000	$204,750,000
AG-3	**Agriculture and Open Space**	**Increase Carbon Storage**	Enhance carbon farming practices in the region.	$82,210,000	$92,690,000

Notes: Cost estimates shown in this table are for selected subset of proposed GHG reduction measures in the RCAAP and do not represent a complete cost estimate for all proposed GHG reduction measures. Measures are each estimated individually as standalone programs. There is potential for efficiency in bundling the Measures together, however no bundling was assumed in the preliminary cost assessment.

Estimates include new projected costs expected to be realized by Napa County. Funding from other sources required for successful program implementation is not included unless otherwise noted. See the Funding and Financing section for more information on potential funding and financing sources.

The estimated costs included here are not an offer for construction and/or project execution. The costs presented in the preliminary costs assessment are considered Class 4 with an accuracy range of -30% to +50% of the actual cost, according to the Recommended Practice No. 107R-19: Cost Estimate Classification System - As Applied in Engineering, Procurement, and Construction for the Environmental Remediation Industries (AACE International 2021). The cost estimates have been prepared for guidance in RCAAP project evaluation and implementation from the information available at the time of preparation of the estimate. The final costs of GHG reduction measures and climate adaptation actions will depend on actual labor, material costs, further program details not yet known at the time the cost assessment was prepared, and other factors. Because of this, project feasibility and funding needs must be carefully reviewed prior to making specific decisions to help ensure proper project evaluation and adequate funding.

Source: **Compiled by Ascent in 2025, based on Preliminary Cost Assessment prepared by Jacobs**.

3 FUNDING AND FINANCING ASSESSMENT

This section summarizes the results of the funding and financing assessment completed for the RCAAP by EPS (see **Attachment I-2**). EPS's analysis focused on the 19 priority measures included in the cost assessment prepared by Jacobs. The four main cost categories defined in the cost assessment (i.e., program costs, capital costs, administrative/labor costs, and contracts and/or material costs), along with identification of the agency or agencies responsible for implementation (i.e., County of Napa, incorporated jurisdiction, or shared implementation by all jurisdictions) were used to help establish a framework of funding mechanisms available for implementation. EPS identified five categories of potential funding sources or financing mechanisms, including:

- **Local funding sources** (e.g., general fund revenues, new taxes or assessments, new fees);
- **Grants** (e.g., federal, state, regional, or local grant programs);
- **Loans** (e.g., California Infrastructure and Economic Development Bank [IBank] products, on-bill financing available through utilities);
- **Debt financing mechanisms** (e.g., general obligation bonds, revenue bonds, certificates of participation, Mello-Roos community facilities districts [CFDs], enhanced infrastructure financing districts [EIFDs], climate resilience districts [CRDs]); and
- **Other sources** (e.g., carbon credits, public-private partnerships, development or operating agreements; and regional programs such as MCE Flex Market Programs, BayREN incentives, Transportation Fund for Clean Air).

EPS' assessment determined that funding and financing options are available for all of the 19 prioritized measures included in the cost assessment. These options could also likely fund most or all implementation cost categories associated with the prioritized measures, with the exception of loans, which typically only fund capital facilities and contracts and materials.

EPS recommended that Napa County Jurisdictions take specific steps to develop a more detailed and specific **funding strategy**, including:

- **Develop a phased funding roadmap** that sequences implementation based on funding availability, project readiness, and potential for maximizing GHG reduction and community co-benefits
- **Prioritize actions that can be implemented relatively easily** by identifying projects that have the following characteristics:
  - Lower cost-barriers,
  - Existing staffing capacity to redirect toward implementation,
  - Capital improvements that can be included into respective jurisdictional CIPs.
- **Determine if any General Fund revenues can be made available** to fund any short- or long-term actions.

- **Evaluate the feasibility of establishing new or dedicated local funding sources**, including new taxes, assessments, fees, or utility surcharges earmarked for GHG reduction or climate adaptation efforts.
- **Pursue state and federal grants by actively monitoring funding opportunities from existing or new programs.** This will require jurisdictions to **build internal capacity or hire grant specialists** and collaborate across public agencies to increase competitiveness.
- **Utilize public financing tools,** such as products offered by IBank, CRDs, CFDs, climate-focused bonds, etc.
- Attract private investment by pursuing public-private partnerships (P3s) for targeted actions.
- Coordinate regionally through the Climate Action Committee (CAC) and corresponding joint powers agreement to align local priorities, pool match funding, and develop joint applications for regional-scale investments.

ATTACHMENT I-1

Ascent Cost Estimation

Programmatic Summary of GHG Measures

Napa County RCAAP

Prepared by: A. White, O. Guretta
Prepared for: Erik de Kok
April 11, 2025
Revision 3

The cost include here are not an offer for construction and/or project execution. The costs presented in this estimate are considered Class 4 with an accuracy range of -30% to +50% of the actual cost, according to the Recommended Practice No. 107R-19: Cost Estimate Classification System - As Applied in Engineering, Procurement, and Construction for the Environmental Remediation Industries (AACE International 2021). The cost estimate has been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project will depend on actual labor, material costs, and competitive variable factors. Because of this, project feasibility and funding needs must be carefully reviewed prior to making specific decisions to help ensure proper project evaluation and adequate funding.

Programmatic costs are estimated based on inputs provided by the County of Napa and assumptions are included as noted in each measure.

401 B Street

Summary of the GHG Mitigation Measures Estimated Costs.

Results are contingent on the accuracy of the input data provided by the County and specific assumptions for each measures should be reviewed for consistency as the measures are further developed.

Summary of Estimated Costs

Measure	Emissions Sector	Strategy	Measure	Net Present Value	Total Cost (Not Discounted)
BE-1 (M1)	Building Energy	Energy Efficiency and Electrification	Develop a comprehensive energy retrofit program to transition existing residential and non-residential buildings to net zero carbon with a target of 25 percent of existing buildings by 2030 and 100 percent by 2045.	$359,870,000	$448,380,000
BE-5 (M2)	Building Energy	Zero Carbon Development	Develop and adopt a Zero-Carbon Buildings Reach Code for New Construction	$1,060,000	$1,330,000
TR-3 (M3)	On-Road Transportation	Low and Zero Emissions Vehicles	Increase access to Zero Emissions Vehicle (ZEV) Fueling Infrastructure	$350,000	$380,000
TR-11 (M4)	On-Road Transportation	Transportation Demand Management (TDM)	Expand Individual Trip TDM Programs	$2,750,000	$3,340,000
OF-3 (M5)	Off-Road Transportation	Electrification and Clean Alternatives	Zero Carbon Construction Equipment - Community	$150,000	$180,000
SW-1 (M6)	Solid Waste	Zero Waste	Increase diversion of solid waste to achieve >80% diversion from landfills by 2035	$14,890,000	$18,250,000
WW-1 (M7)	Water/Waste Water	Waste Water Treatment	Reduce fugitive methane emissions from Wastewater Treatment Plants (WWTPs)	$1,890,000	$2,390,000
AG-1 (M8)	Agriculture and Open Space	Reduce GHGs from Agricultural Equipment	Reduce fossil fuel consumption in field equipment	$155,180,000	$204,750,000
AG-3 (M9)	Agriculture and Open Space	Increase Carbon Storage	Enhance carbon farming practices in the region	$82,210,000	$92,690,000

General Notes

- Measures are each estimated individually as standalone programs. There is potential for efficiency in bundling the Measures together.

- Estimates include new projected costs expected to be realized by Napa County. Funding from other sources required for successful program implementation is not included unless otherwise noted.

-The cost include here are not an offer for construction and/or project execution. The costs presented in this estimate are considered Class 4 with an accuracy range of -30% to +50% of the actual cost, according to the Recommended Practice No. 107R-19: Cost Estimate Classification System - As Applied in Engineering, Procurement, and Construction for the Environmental Remediation Industries (AACE International 2021). The cost estimate has been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project will depend on actual labor, material costs, and competitive variable factors. Because of this, project feasibility and funding needs must be carefully reviewed prior to making specific decisions to help ensure proper project evaluation and adequate funding.

To refine each of the cost estimates, the following could be done:

- Review and confirm the assumptions on labor costs, both the assumed rate and FTE.
- Periodic costs, such as a program updates occurring every 3 or 5 years, are annualized for estimate purposes. These costs can be allocated to specific years and discounted accordingly as more details of timing and precise implementation are defined.

For each of the cost estimates, the following assumptions are made:

- Labor costs include internal staff, not consultants unless otherwise noted.
- An annual discount rate of 2.2% is used for all estimates unless otherwise noted. This is the 20-year real interest rate on US treasury notes and bonds for the 2025 calendar year per OMB Circular No. A-94.

Estimate #: 1
Emissions Sector: Building Energy
Strategy: Energy Efficiency and Electrification
Measure: Develop a comprehensive energy retrofit program to transition existing residential and non-residential buildings to net zero carbon with a target of 25 percent of existing buildings by 2030 and 100 percent by 2045.

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Program Labor Cost Components

The inputs here will be the basis for the estimated cost of labor (administrative, engineering, planning, consultant, etc.) associated with setting up and running the program.

Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Set up Tasks	Duration, yr.	Timeline
Pre-electrification program development	*3*	*2026 - 2028*
Reach code development	*3*	*2026 - 2028*
Streamline permitting program	*1*	*2026*
Community outreach and education	*3*	*2026 - 2028*
Residential income limit study	*3*	*2026 - 2028*
Non-residential participation study	*3*	*2026 - 2028*

Ongoing Program Management Tasks	Duration, yr.	Timeline
Implementation management	*16*	*2029 - 2045*
Reach code updates (every 3 years)	*16*	*2029 - 2045*
Permitting and outreach updates (annually)	*16*	*2029 - 2045*
Income limit reviews (annually)	*16*	*2029 - 2045*
Income limit program major review and update (one time)	*1*	*2035*

Program Material Cost Components

The inputs here will inform the basis for the cost of variable components (program participation, construction projects, capital expenditures) dependent on program targets.

Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Goal	Target	Deadline
Transition all existing residential buildings to all-electric with a target of 25 percent of existing buildings by 2030 and 100 percent by 2045.	*Avg two rebate projects per home*	2045
Transition all existing nonresidential buildings to all-electric with a target of 25 percent of existing buildings by 2030 and 100 percent by 2045.	*Avg two rebate projects per building*	2045

Data Request Tab Instructions:

Input required	No input needed
Input optional (to override **preliminary** assumption)	Red text indicated change based on review in 9-2025.

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Measure				Assumptions					
#	Emissions Sector	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
1	Building Energy	Energy Efficiency and Electrification	Develop a comprehensive energy retrofit program to transition existing residential and non-residential buildings to net zero carbon with a target of 25 percent of existing buildings by 2030 and 100 percent by 2045.	*Building types included*	*residential and non-residential*	*text*	Client input	High	
				Number of residential homes in program area	*56,049*	*quant*	Census data	High	Not all homes/buildings will require participation in rebate program. This is accounted for by "Residential target" value below. This number has been updated based on Ascent 9-19-25
				Number of non-residential buildings in program area	*34,890*	*quant*	Census data	High	Not all buildings will require participation in rebate program. This is accounted for by "Non-residential target" value below. Value confirmed on 2-27-25.
				Residential target	*2.0*	*avg projects per building*	Client input	Moderate	Ground truth research: 2.7 natural gas appliances per home. See References tab for additional info
				Non-residential target	*2.0*	*avg projects per building*	Client input	Low	Preliminary research did not return a value for number of natural gas appliances per non-res building. Recommend confirming this value, as non-res. rebate costs are largest driver of total program
				Residential adoption	*25%*	*of all homes at year 5*	Client input	High	
					50%	*at year 10*	Client input	High	
					75%	*at year 15*	Client input	High	
					100%	*at year 20*	Client input	High	
				Non-Residential adoption	*25%*	*of all buildings at year 5*	Client input	High	
					50%	*at year 10*	Client input	High	
					75%	*at year 15*	Client input	High	
					100%	*at year 20*	Client input	High	
				Average residential rebate	*$2,000*	*USD*	Client Input	Moderate	Based on similar rebate programs initial rebate was defined at $1,500. Rebate values vary widely across all similar programs. Key driver in total cost estimate. Per comment from Ryan Melendez value revised to be higher (maybe closer to $2000-$3000).
				Average non-residential rebate	*$3,500*	*USD*	Client Input	Low	Based on similar rebate programs original cost $3,000. Rebate values vary widely across all similar programs. Key driver in total cost estimate. Should be reviewed. Per comment from Ryan Melendez value revised to be higher.
				Average residential permitting fee	*$290*	*USD*	Jacobs research	Moderate	Assumes permitting fee for "new or alteration to electrical" according to Napa County Example Fees for Common BES Projects
				Residential permitting fee reduction	*20%*	*of total fee*	Client input	Moderate	
				Average non-residential permitting fee	*$740*	*USD*	Jacobs research	Moderate	Assumes permitting fee for "new or alteration to electrical" according to Napa County Example Fees for Common BES Projects
				Non-Residential permitting fee reduction	*20%*	*of total fee*	Client input	Moderate	
				Pre-electrification program development labor	*1.0*	*FTEs over task duration*	Jacobs assumption	Low	
				Reach code development labor	*0.5*	*FTEs over task duration*	Jacobs assumption	Low	
				Streamlined permitting program labor	*0.5*	*FTEs over task duration*	Jacobs assumption	Low	
				Community outreach and education labor	*1.0*	*FTEs over task duration*	Jacobs assumption	Low	
				Residential income limit study labor	*0.5*	*FTEs over task duration*	Jacobs assumption	Low	
				Non-residential participation study labor	*0.5*	*FTEs over task duration*	Jacobs assumption	Low	
				Implementation management labor	*1.2*	*FTEs over task duration*	Jacobs assumption	Low	
				Reach code updates labor	*0.1*	*FTEs over task duration*	Jacobs assumption	Low	
				Permitting and outreach updates labor	*0.1*	*FTEs over task duration*	Jacobs assumption	Low	
				Income limit reviews labor	*0.3*	*FTEs over task duration*	Jacobs assumption	Low	
				Income limit program major review and update labor	*0.5*	*FTEs over task duration*	Jacobs assumption	Low	
				Average labor rate (all-in cost)	*140*	*USD/hr*	Jacobs assumption	Moderate	Assumes internal labor for all program development and management labor costs. Assumes no consultant or contractor

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Estimate #: 1
Emissions Sector: Building Energy
Strategy: Energy Efficiency and Electrification
Measure: Develop a comprehensive energy retrofit program to transition existing residences and businesses to net zero carbon by 2045

**red text denotes cells with formulas that must be reviewed and potentially manually updated with any updates to Program Outline or Inputs Matrix tab inputs

Parameters and Assumptions

Demographic

Home types included:	residential and non-residential
Number of residential homes in program area	56,049
Number of non-residential buildings in program area	34,890
Avg number of natural gas appliances per residential home	2.00
Avg number of natural gas appliances per non-residential building	2.00

Adoption

Year 5		
Residential adoption	25%	of all homes in implementation area
Commercial adoption	25%	of all commercial buildings in implementation area

Year 10		
Residential adoption	50%	of all homes in implementation area
Commercial adoption	50%	of all commercial buildings in implementation area

Year 15		
Residential adoption	75%	of all homes in implementation area
Commercial adoption	75%	of all commercial buildings in implementation area

Year 20		
Residential adoption	100%	of all homes in implementation area
Commercial adoption	100%	of all commercial buildings in implementation area

Rebates

Average rebate	
Residential rebate per project	$2,000
Commercial rebate per project	$3,000

Reduced permitting fees

	Avg permitting fee	Fee reduction	Cost per permit to Jurisdictions
Residential	$290	20%	$58
Commercial	$740	20%	$148

Program Costs

	Years	FTEs	Duration (years)	Avg Labor Rate, $/hı	Cost
Pre-electrification program development labor	1 to 3	1.00	3	$140	$840,000
Reach code development labor	1 to 3	0.50	3	$140	$420,000
Streamlined permitting program labor	1 to 3	0.50	3	$140	$420,000
Community outreach and education labor	1 to 3	1.00	3	$140	$840,000
Residential income limit study labor	1 to 3	0.50	3	$140	$420,000
Non-residential participation study labor	1 to 3	0.50	3	$140	$420,000
Implementation management labor	4 to 20	1.20	17	$140	$5,712,000
Reach code updates labor	4 to 20	0.13	17	$140	$595,000
Permitting and outreach updates labor	4 to 20	0.13	17	$140	$595,000
Income limit reviews labor	4 to 20	0.25	17	$140	$1,190,000
Income limit program major review and update labor	10	0.50	1	$140	$140,000

Total Cost Calculation

	Cumulative Spent				
	Year 5	Year 10	Year 15	Year 20	**Total**
Total residential rebate cost	$56,049,000	$112,098,000	$168,147,000	$224,196,000	$224,196,000
Total commercial rebate cost	$52,335,000	$104,670,000	$157,005,000	$209,340,000	$209,340,000
Total permit fee reduction cost	$812,711	$1,625,421	$2,438,132	$3,250,842	$3,250,842
Total administrative labor costs	$4,312,000	$6,832,000	$9,212,000	$11,592,000	$11,592,000
Total cost (at today's value)	$113,508,711	$225,225,421	$336,802,132	$448,378,842	**$448,378,842**

Annual Spent																					
Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Total residential rebate cost	$0	$11,209,800	$11,209,800	$11,209,800	$11,209,800	$11,209,800	$11,209,800	$11,209,800	$11,209,800	$11,209,800	$11,209,800	$11,209,800	$11,209,800	$11,209,800	$11,209,800	$11,209,800	$11,209,800	$11,209,800	$11,209,800	$11,209,800	$11,209,800
Total commercial rebate cost	$0	$10,467,000	$10,467,000	$10,467,000	$10,467,000	$10,467,000	$10,467,000	$10,467,000	$10,467,000	$10,467,000	$10,467,000	$10,467,000	$10,467,000	$10,467,000	$10,467,000	$10,467,000	$10,467,000	$10,467,000	$10,467,000	$10,467,000	$10,467,000
Total permit fee reduction cost	$0	$162,542	$162,542	$162,542	$162,542	$162,542	$162,542	$162,542	$162,542	$162,542	$162,542	$162,542	$162,542	$162,542	$162,542	$162,542	$162,542	$162,542	$162,542	$162,542	$162,542
Total administrative labor costs	$0	$862,400	$862,400	$862,400	$862,400	$862,400	$504,000	$504,000	$504,000	$504,000	$504,000	$476,000	$476,000	$476,000	$476,000	$476,000	$476,000	$476,000	$476,000	$476,000	$476,000
Total spent	$0	$22,701,742	$22,701,742	$22,701,742	$22,701,742	$22,701,742	$22,343,342	$22,343,342	$22,343,342	$22,343,342	$22,343,342	$22,315,342	$22,315,342	$22,315,342	$22,315,342	$22,315,342	$22,315,342	$22,315,342	$22,315,342	$22,315,342	$22,315,342
Real discount rate	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%
Discount Factor		0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.80	0.79	0.77	0.75	0.74	0.72	0.71	0.69	0.68	0.66	0.65
Annual net present value (annual)	$0	$22,213,055	$21,734,887	$21,267,013	$20,809,210	$20,361,263	$19,608,427	$19,186,328	$18,773,315	$18,369,193	$17,973,770	$17,564,820	$17,186,712	$16,816,744	$16,454,739	$16,100,528	$15,753,941	$15,414,815	$15,082,989	$14,758,307	$14,440,613
Total net present value	**$359,870,669**																				

Results Considerations
To refine this cost estimate the following could be done: Review and confirm the number of rebates to be issued and the cost per rebate for the commercial rebate program. This is the largest driver of cost. There is variability in the desired number of equipment between county provided data - review to determine if 2.0 or 2.7 rebate will be provided per building type.

Additional notes:

- Assumption: all new homes built after 2024 have electric equipment and will not need to utilize rebate program.

Estimate #2
Emissions Sector: Building Energy
Strategy: Zero Carbon Development
Measure: BE-5: Develop and adopt a Zero-Carbon Buildings Reach Code for New Construction

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Program Labor Cost Components

The inputs here will be the basis for the estimated cost of labor (administrative, engineering, planning, consultant, etc.) associated with setting up and running the program.

Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Set up Tasks	Measure -Action ID	Duration, yr.	Timeline
Develop and adopt regionally consistent energy efficiency and renewable energy reach building codes	BE-5a	2	2027 - 2028
Develop process to track climate and energy codes and bills	BE-5b	2	2027 - 2028
Develop a process for evaluating and updating low carbon building material requirements	BE-5c	2	2027 - 2028

Ongoing Program Management Tasks		Duration, yr.	Timeline
Implement and manage regional energy reach codes program	BE-5a	17	2029 - 2045
Reach code updates (every 3 years)	BE-5	17	2029 - 2045
Review progress of state codes and bills to inform regional reach code	BE-5b	17	2029 - 2045
Review regional standards for low carbon building material requirements	BE-5c	17	2029 - 2045

Program Material Cost Components

The inputs here will inform the basis for the cost of variable components (program participation, construction projects, capital expenditures) dependent on program targets.

Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Goal		Target	Deadline
NONE			

Data Request Tab Instructions:

Input required | No input needed

Input optional (to override **preliminary** assumption Client-provided value

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	Measure				Assumptions				
#	Emissions Sector	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
			Decarbonize New Buildings						*Client comment: "At this point in time reach codes are not complicated to write, adopt, and implement because so many CA jurisdictions are early adopters and do the heavy lifting...assume FTEs for entire measure over duration would not exceed 0.25" Client input on 1/16/25*
2	Building Energy	Zero Carbon Development		*Reach code development labor*	*0.08*	*FTEs over task duration*	Client input	Moderate	
				Labor to track progress of state codes and bills related to climate to inform initial Reach code development	*0.08*	*FTEs over task duration*	Client input	Moderate	Client input on 1/16/25
				Labor for initial development of low carbon building materials requirements for Reach code	*0.08*	*FTEs over task duration*	Client input	Moderate	Client input on 1/16/25
				Labor for Reach code implementation and ongoing program management	*0.06*	*FTEs over task duration*	Client input	Moderate	Client input on 1/16/25
				Labor for periodic Reach code updates	*0.06*	*FTEs over task duration*	Client input	Moderate	Client input on 1/16/25
				Labor for state codes/bills review to inform reach code updates	*0.06*	*FTEs over task duration*	Client input	Moderate	Client input on 1/16/25
				Labor for reviewing low carbon building materials requirements to inform Reach code updates	*0.06*	*FTEs over task duration*	Client input	Moderate	Assumes internal labor for all program development and management labor costs. Assumes no consultant or contractor labor costs.
				Average labor rate (all-in cost)	*140*	*USD/hr*	Jacobs assumption	Moderate	

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Estimate #: 2
Emissions Sector: Building Energy
Strategy: Zero Carbon Development
Measure: Develop and adopt a Zero-Carbon Buildings Reach Code for New Construction

**red text denotes cells with formulas that must be reviewed and potentially manually updated with any updates to Program Outline or Inputs Matrix tab inputs

Parameters and Assumptions

Program Costs

	Years	FTEs	Duration (years	Avg Labor Rate	Cost
Reach code development labor	2 to 3	0.08	2	$140	$46,667
Labor to track progress of state codes and bills related to climate to inform initial Reach code development	2 to 3	0.08	2	$140	$46,667
Labor for initial development of low carbon buidling materials requirements for Reach code	2 to 3	0.08	2	$140	$46,667
Labor for Reach code implementation and ongoing program management	4 to 20	0.06	17	$140	$297,500
Labor for periodic Reach code updates	4 to 20	0.06	17	$140	$297,500
Labor for state codes/bills review to inform reach code updates	4 to 20	0.06	17	$140	$297,500
Labor for reviewing low carbon building materials requirements to inform Reach code updates	4 to 20	0.06	17	$140	$297,500

Total Cost Calculation

	Cumulative Spent				
	Year 5	Year 10	Year 15	Year 20	**Total**
Total administrative labor costs	$280,000	$630,000	$980,000	$1,330,000	$1,330,000
Total cost (at today's value)	$280,000	$630,000	$980,000	$1,330,000	**$1,330,000**

	Annual Spent																				
Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Total administrative labor costs	$0	$56,000	$56,000	$56,000	$56,000	$56,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000
Total spent	$0	$56,000	$56,000	$56,000	$56,000	$56,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000
Real discount rate	##########	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%
Discount Factor		0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.80	0.79	0.77	0.75	0.74	0.72	0.71	0.69	0.68	0.66	0.65
Annual net present value (annual)	$0	$54,795	$53,615	$52,461	$51,332	$50,227	$61,432	$60,109	$58,815	$57,549	$56,310	$55,098	$53,912	$52,752	$51,616	$50,505	$49,418	$48,354	$47,313	$46,295	$45,298
Total net present value	**$1,057,206**																				

Results Considerations

- Cost to implement is not included due to varying nature of codes

Additional notes:

Estimate #: 3
Emissions Sector: On-Road Transportation
Strategy: Low and Zero Emissions Vehicles
Measure: Increase access to Zero Emissions Vehicle (ZEV) Fueling Infrastructure

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Program Labor Cost Components

The inputs here will be the basis for the estimated cost of labor (administrative, engineering, planning, consultant, etc.) associated with setting up and running the program.

Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Set up Tasks	Measure-Action ID	Duration, yr.	Timeline
Study and stakeholder coordination (MTC) to identify location for med / heavy duty fleet	*TR-3-a*	*3*	*2026-2028*
Gap analysis of existing private parking infrastructure to achieve 10% EVSE and an additional 10% EV-ready	*TR-3-b*	*2*	*2026-2027*

Ongoing Program Management Tasks	Measure-Action ID	Duration, yr.	Timeline
Review and update targets and progress for EVSE in parking infrastructure	*TR-3*	*9, every 5 years*	*2027 - 2035*

Program Material Cost Components

The inputs here will inform the basis for the cost of variable components (program participation, construction projects, capital expenditures) dependent on program targets.

Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Goal	Measure-Action ID	Target	Deadline
NONE			

Data Request Tab Instructions:

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Input required	No input needed	Client-provided value
Input optional (to override **preliminary** assumption)		Updated by Jacobs based on industry best practices

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Measure				Assumptions				
#	Emissions Sector	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
3	On-Road Transport	Low and Zero Emissions Vehicles	Increase access to Zero Emissions Vehicle (ZEV) fueling infrastructure	*Labor to identify opportunities and locations for chargers for medium and heavy duty fleet*	*0.25*	*FTEs over task duration*	Client input	Moderate	Program includes county-wide fleet mix, not just county-owned vehicles. Assumes ability to leverage existing GIS info/staff to understand scale of program. From Deborah Elliot: 0.25 because most jurisdictions are getting technical assistance on this from MTC for municipal fleets. Confirmed with Jacobs team. Client input on 1/16/25
				Labor for gap analysis of existing private parking infrastructure	*0.20*	*FTEs over task duration*	Jacobs Industry Best Practice	Moderate	Assume electrical infrastructure info. is available through public utility and that the County already has a relationship with private parking owners and has access to electricity records. Outreach component includes education component but not infrastructure info. gathering. No material costs are included for outreach activities.
				Labor for periodic review and update of requirements	*0.05*	*FTEs over task duration*	Jacobs Industry Best Practice	Moderate	Ongoing updates are about 20% of initial evaluation. Reviewed with Jacobs team and consistent with industry best practices.
				Average labor rate (all-in cost)	*140*	*USD/hr*	Jacobs assumpti	Moderate	Assumes internal labor for all program development and management labor costs. Assumes no consultant or contractor labor costs.

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Estimate #: 3
Emissions Sector: On-Road Transportation
Strategy: Low and Zero Emissions Vehicles
Measure: Increase access to Zero Emissions Vehicle (ZEV) Fueling Infrastructure

**red text denotes cells with formulas that must be reviewed and potentially manually updated with any updates to Program Outline or Inputs Matrix tab inputs

Parameters and Assumptions

Program Costs

	Years	FTEs	Duration (yea	Avg Labor Rat	Cost
Labor to identify opportunities and locations for chargers for medi	1 to 3	0.25	2	$140	$140,000
Labor for gap analysis of existing private parking infrastructure	1 to 2	0.20	2	$140	$112,000
Labor for periodic review and update of requirements	2 to 10	0.05	9	$140	$126,000

Total Cost Calculation

	Cumulative Spent				
	Year 5	Year 10	Year 15	Year 20	**Total**
Total administrative labor costs	$308,000	$378,000	$378,000	$378,000	$378,000
Total cost (at today's value)	$308,000	$378,000	$378,000	$378,000	**$378,000**

Annual Spent

Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Total administrative labor costs	$0	$61,600	$61,600	$61,600	$61,600	$61,600	$14,000	$14,000	$14,000	$14,000	$14,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total spent	$0	$61,600	$61,600	$61,600	$61,600	$61,600	$14,000	$14,000	$14,000	$14,000	$14,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Real discount rate	##########	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%
Discount Factor		0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.80	0.79	0.77	0.75	0.74	0.72	0.71	0.69	0.68	0.66	0.65
Annual net present value (annual)	$0	$60,274	$58,976	$57,707	$56,465	$55,249	$12,286	$12,022	$11,763	$11,510	$11,262	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total net present value	**$347,515**																				

Results Considerations

- There is no cost to customer or cost for increased utilization of existing incentive program factored in these results

Additional notes:

Assumes this is for a county wide fleet mix and that there is existing background information available. For example existing studies or mapping tools that have been used to identify the starting and ending point of trips.
Assumes that the County already has some basis for a network that can be used for medium and heavy duty charging.
Measures is for a study only and does not include developing infrastructure.
The cost for external studies done by a consultant are not included.

Estimate #: 4
Emissions Sector: On-Road Transportation
Strategy: Transportation Demand Management (TDM)
Measure: Expand Individual Trip TDM Programs

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Program Labor Cost Components

The inputs here will be the basis for the estimated cost of labor (administrative, engineering, planning, consultant, etc.) associated with setting up and running the program.

Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Set up Tasks	Measure-Action ID	Duration, yr.	Timeline
Support NVTA to secure additional funding for existing incentives	*TR-11-a1*	*2*	*2028-2029*
Consider expansion of current TDM programs through outreach	*TR-11-a2*	*3*	*2028-2030*
Develop and adopt TDM ordinances in all jurisdictions by 2028	*TR-11-b1*	*3*	*2028-2030*
Define and develop annual reporting metrics program (e.g. participation, VMT reduction, mode shift, funding)	*TR-11-b1*	*3*	*2028-2030*
Feasibility analysis for mobility as a service (MAAS)	*TR-11-c1*	*3*	*2028-2030*
Identify polices and programs that would spur adoption of services	*TR-11-c1*	*2*	*2028-2030*

Ongoing Program Management Tasks		Duration, yr.	Timeline
Expand TDM program through ongoing outreach to employers and existing participants	*TR-11-a2*	*18*	*2028-2045*
Annual metrics reporting	*TR-11-b1*	*18*	*2028 - 2045*
Review, renew or amend agreements and partnerships	*TR-11-a2*	*18*	*2028 - 2045*
Ongoing evaluation and opportunity assessment ordinance and TDM program implementation	*TR-11-c1*	*18*	*2028 - 2045*

Program Material Cost Components

The inputs here will inform the basis for the cost of variable components (program participation, construction projects, capital expenditures) dependent on program targets.

Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Goal		Target	Deadline
NONE			

Data Request Tab Instructions:

Input required	No input needed	Client-provided value
Input optional (to override **preliminary** assumption)		Updated by Jacobs based on industry best practices

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Measure			Assumptions					
#	Emissions Sector	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
4	On-Road Transportation	Transportation Demand Management (TDM)	Expand Individual Trip TDM Programs						Assumes support is limited to identification of relevant grant programs and support in preparation of applications along with existing NVTA staff. Assume that the primary grant application will either be through the state or other transportation agency and that the County staff is minimal / limited with primary to provide information to support Napa Valley Transit, i.e. they are not the primary grant application.
				Labor to support NVTA to secure additional funding	*0.1*	*FTEs over task dur.*	Jacobs Industry Best Practice	Moderate	
				Labor to expand current TDM programs through outreach	*0.2*	*FTEs over task dur.*	Jacobs assumption	Moderate	Develop turnkey outreach program to increase use of existing TDM programs and incentives.
				Labor to develop and adopt TDM ordinances	*0.3*	*FTEs over task dur.*	Jacobs Industry Best Practice	Moderate	Reviewed with Jacobs team and consistent with industry best practices.
				Labor to develop annual reporting metrics process	*0.1*	*FTEs over task dur.*	Jacobs Industry Best Practice	Moderate	Reviewed with Jacobs team and consistent with industry best practices.
				Labor to manage MAAS feasibility study	*0.1*	*FTEs over task dur.*	Jacobs assumption	Moderate	County staff requirement to review and approve consultant study
				Labor to identify policies and programs to spur adoption of services	*0.1*	*FTEs over task dur.*	Jacobs assumption	Moderate	County staff requirement to review and approve consultant recommendations
				Labor for TDM program outreach	*0.1*	*FTEs over task dur.*	Jacobs assumption	Moderate	
				Labor for annual metrics reporting	*0.1*	*FTEs over task dur.*	Jacobs assumption	Moderate	
				Labor to manage partnership relationships	*0.2*	*FTEs over task dur.*	Jacobs Industry Best Practice	Moderate	This is more about bringing all the components together in one place i.e. an app. Assumes mostly private partners – on the order of three partners.
				Labor for ongoing program evaluation	*0.1*	*FTEs over task dur.*	Jacobs assumption	Moderate	
				Average labor rate (all-in cost)	*140*	*USD/hr*	Jacobs assumption	Moderate	Assumes internal labor for all program development and management labor costs. Assumes no consultant or contractor labor costs.
				Material costs for outreach	*$ -*		Client input	Moderate	*Brenda Hom: Cost of labor only. The search for funding for rebates is intended to come from sources outside of the county, though it is not limited to being self-funded.*
				Consultant services for MAAS feasibility study and identification of relevant MAAS policies and programs to leverage	*$ 100,000*	*USD*	Jacobs Industry Best Practice	Moderate	Assumes outside consultant for a one time feasibility study and benchmarking of existing programs. This would include a policy audit of the current Napa County polices ex. Parking.

Estimate #: 4
Emissions Sector: On-Road Transportation
Strategy: Transportation Demand Management (TDM)
Measure: Expand Individual Trip TDM Programs

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**red text denotes cells with formulas that must be reviewed and potentially manually updated with any updates to Program Outline or Inputs Matrix tab inputs

Parameters and Assumptions

Program Costs

	Years	FTEs	Duration (years	Avg Labor Rate	Cost
Labor to support NVTA to secure additional funding	3 to 4	0.10	2	$140	$56,000
Labor to expand current TDM programs through outreach	3 to 5	0.15	3	$140	$126,000
Labor to develop and adopt TDM ordinances	3 to 5	0.25	3	$140	$210,000
Labor to develop annual reporting metrics process	3 to 5	0.10	3	$140	$84,000
Labor for MAAS feasibility study	3 to 5	0.10	3	$140	$84,000
Labor to identify policies and programs to spur adoption of services	3 to 4	0.10	2	$140	$56,000
Labor for TDM program outreach	3 to 20	0.10	18	$140	$504,000
Labor for annual metrics reporting	3 to 20	0.10	18	$140	$504,000
Labor to manage partnership relationships	3 to 20	0.20	18	$140	$1,008,000
Labor for ongoing program evaluation	3 to 20	0.10	18	$140	$504,000

Contract Fees & Material Costs

	Years	Cost
Consultant fee for MAAS feasibility study	3 to 5	$ 100,000
Material costs for outreach	3 to 20	$ -

Total Cost Calculation

	Cumulative Spent				
	Year 5	Year 10	Year 15	Year 20	**Total**
Total administrative labor costs	$1,136,000	$1,836,000	$2,536,000	$3,236,000	$3,236,000
Total contract fees & material costs	$100,000	$100,000	$100,000	$100,000	$100,000
Total cost (at today's value)	$1,236,000	$1,936,000	$2,636,000	$3,336,000	**$3,336,000**

Annual Spent

Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Total administrative labor costs	$0	$227,200	$227,200	$227,200	$227,200	$227,200	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000
Total contract fees & material costs	$0	$20,000	$20,000	$20,000	$20,000	$20,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total spent	$0	$247,200	$247,200	$247,200	$247,200	$247,200	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000
Real discount rate	############	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%
Discount Factor		0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.80	0.79	0.77	0.75	0.74	0.72	0.71	0.69	0.68	0.66	0.65
Annual net present value (annual)	$0	$241,879	$236,672	$231,577	$226,592	$221,714	$122,863	$120,219	$117,631	$115,099	$112,621	$110,197	$107,824	$105,503	$103,232	$101,010	$98,836	$96,708	$94,626	$92,589	$90,596
Total net present value	**$2,747,989**																				

Results Considerations

To refine this cost estimate the following could be done:
Review and confirm administrative labor requirements. This is the largest driver of cost.

Additional notes:

Notes:
- Consultant fees included as a lump sum where relevant (MAAS study).
- Assumes the county already has a developed outreach program campaign that can be built upon and ready to launch. Assumes that analytics are run on the current outreach programs and will require some modifications to meet annual reporting requirements but will not be developed from scratch.

Estimate #: 5
Emissions Sector: Off-Road Transportation
Strategy: Electrification and Clean Alternatives
Measure: Zero Carbon Construction Equipment - Community

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Program Labor Cost Components

The inputs here will be the basis for the estimated cost of labor (administrative, engineering, planning, consultant, etc.) associated with setting up and running the program.

Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Set up Tasks	Measure-Act	Duration, yr.	Timeline
Develop brochure to advertise existing incentives	*OF-3a*	*1*	*2029*

Ongoing Program Management Tasks		Duration, yr.	Timeline
Periodic updates of incentives brochure	*OF-3a*	*every 3 years*	*2030 - 2045*

Program Material Cost Components

The inputs here will inform the basis for the cost of variable components (program participation, construction projects, capital expenditures) dependent on program targets.

Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Goal		Target	Deadline
Distribute brochures to provide information about available incentives for electric construction equipment to contractors at the building permit counter		*All contractors seeking a building permit should have access to updated literature*	2045

Data Request Tab Instructions:

Input required	No input needed	client-provided value
Input optional (to override **preliminary** assumptio		Updated by Jacobs based on industry best practices

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Measure				Assumptions				
#	Emissions Sector	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
5	Off-Road Vehicles and Equipment	Electrification and Clean Alternatives	Zero Carbon Construction Equipment - Community	*FTE for developing electric construction equipment incentive brochure*	*0.1*	*FTEs over task duration*	Jacobs assumption	Low	
				FTE to periodically update brochures for currently available incentives	*0.03*	*FTEs over task duration*	Jacobs assumption	Low	0.1 FTE every 3 years
				Estimated cost/brochure	*0.71*	*USD/brochure*	Jacobs Industry Best Practice	Moderate	Fedex printing cost for color, trifold brochure, 500/order as of 2/19/25
				Target # brochures distributed / year	*500*	*quantity*	Jacobs Industry Best Practice	Moderate	331 single and multi-family building permits issued in Napa county in 2023 according to NAHB source: https://www.nahb.org/News%20and%20Economics/Housing%20Economics/State%20and%20Local%20Data/Building%20Permits%20by%20State%20and%20Metro%20Area
				Average labor rate (all-in cost)	*140*	*USD/hr*	Jacobs assumption	Moderate	Assumes internal labor for all program development and management labor costs. Assumes no consultant or contractor labor costs.

Estimate #: 5
Emissions Sector: Off-Road Transportation
Strategy: Electrification and Clean Alternatives
Measure: Zero Carbon Construction Equipment - Community

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**red text denotes cells with formulas that must be reviewed and potentially manually updated with any updates to Program Outline or Inputs Matrix tab inputs

Parameters and Assumptions

Program Costs

	Years	FTEs	Duration (ye:	Avg Labor Ra	Cost
Labor to develop incentive brochure	4	0.10	1	$140	$28,000
Labor to periodically update brochures for currently available incentives	5 to 20	0.03	16	$140	$149,333

Material Costs

Cost per brochure	$	0.71
Brochures printed per year		500

Total Cost Calculation

	Cumulative Spent				
	Year 5	Year 10	Year 15	Year 20	**Total**
Total administrative labor costs	$37,333	$84,000	$130,667	$177,333	$177,333
Total material costs	$355	$2,130	$3,905	$5,680	$5,680
Total cost (at today's value)	$37,688	$86,130	$134,572	$183,013	**$183,013**

Annual Spent

Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Total administrative labor costs	$0	$7,467	$7,467	$7,467	$7,467	$7,467	$9,333	$9,333	$9,333	$9,333	$9,333	$9,333	$9,333	$9,333	$9,333	$9,333	$9,333	$9,333	$9,333	$9,333	$9,333
Total material costs	$0	$71	$71	$71	$71	$71	$355	$355	$355	$355	$355	$355	$355	$355	$355	$355	$355	$355	$355	$355	$355
Total spent	$0	$7,538	$7,538	$7,538	$7,538	$7,538	$9,688	$9,688	$9,688	$9,688	$9,688	$9,688	$9,688	$9,688	$9,688	$9,688	$9,688	$9,688	$9,688	$9,688	$9,688
Real discount rate	##########	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%
Discount Factor		0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.80	0.79	0.77	0.75	0.74	0.72	0.71	0.69	0.68	0.66	0.65
Annual net present value (annual)	$0	$7,375	$7,217	$7,061	$6,909	$6,761	$8,502	$8,319	$8,140	$7,965	$7,794	$7,626	$7,462	$7,301	$7,144	$6,990	$6,840	$6,692	$6,548	$6,407	$6,269
Total net present value	**$145,324**																				

Results Considerations

To refine this cost estimate the following could be done:
Review and confirm administrative labor requirements. This is the largest driver of cost.
Review the size of the outreach program to make sure aligns with anticipated population.

Additional notes:

- No incentive funding is included in this estimate. Brenda Hom: "The purpose of this measure is to have the county/cities require the use of zero carbon equipment and identify outside incentive sources (E.g., BAAQMD or the state). Like M4, it is not intended to be funded by the municipalities, but they could if they wanted to."
- Cost to customer would vary widely

Estimate #: 6
Emissions Sector: Solid Waste
Strategy: Zero Waste
Measure: Increase diversion of solid waste to achieve >80% diversion from landfills by 2035

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Program Labor Cost Components

The inputs here will be the basis for the estimated cost of labor (administrative, engineering, planning, consultant, etc.) associated with setting up and running the program.

Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Set up Tasks	Measure-Action ID	Duration, yr.	Timeline
~~*Setup to expand residential backyard composting program & advertise*~~ *(Although this is listed as a component, per County staff comments no expansion is included in the cost estimate. 4/2/2025)*	*SW-1-a1*	*1*	*2025*
Adopt and implement Reusable Food Ware and Waste Reduction Ordinance	*SW-1-a2*	*2*	*2025 - 2026*
Perform feasibility study to adopt similar ordinance in all regional cities	*SW-1-a3*	*2*	*2025 - 2026*
Implement mandatory commercial food waste diversion program for food facility health permit holders	*SW-1-c,d1/SW-1-a5*	*2*	*2025 - 2026*
Implement waste bin audit program	*SW-1-d2/SW-1-a6*	*2*	*2025-2026*

Ongoing Program Management Tasks		Duration, yr.	Timeline
Ongoing management of residential composting program expansion	*SW-1-a1*	*20 yrs*	*2027 - 2045*
Implementation and enforcement of Reusable Food Ware and Waste Reduction Ordinance	*SW-1-a2*	*19 yrs*	*2027 - 2045*
Ongoing SB 1383/Edible Food Recovery Program Implementation & Management	*SW-1-a4*	*20 yrs*	*2027 - 2045*
Ongoing evaluation of Mandatory Commercial Food Waste Diversion Program	*SW-1-a5*	*20 yrs*	*2027 - 2045*
Ongoing evaluation of Waste Bin Audits	*SW-1-a6*	*20 yrs*	2027 - 2045

Program Material Cost Components

The inputs here will inform the basis for the cost of variable components (program participation, construction projects, capital expenditures) dependent on program targets.

Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Goal		Target	Deadline
Composting program outreach - start kit, info pamphlet, composting bins		*0% expansion of existing program*	2045

Data Request Tab Instructions:

Input required	No input needed
Input optional (to override **prelimi**	client-provided value Updated by Jacobs based on industry best practices Updated per 3/12 staff comments and follow up discussion 4/2/25

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Measure				Assumptions				
#	Emissions Secto	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
6	Solid Waste	Zero Waste	Increase diversion of solid waste to achieve diversion of at least 80% of waste from landfills by 2035	~~*Existing enrolled households in backyard compost program*~~	90	*# households*	Client input	High	# of households enrolled number from a 2018 source, scaled by the population change between 2018 and 2024 Source found governments spent an average of $12 per ton of organic materials composted at home; used an average of 646 pounds per year for each household. *Jesse: This number is County and City combined*. Client input on 1/30/25
				~~*Existing annual material costs for backyard compost program*~~	5100	*USD/year*	Client input	High	
				~~*Existing labor for management of backyard compost program*~~	0.011	*FTE/year*	Client input	High	Based on job titles found under County of Los Angeles Public Works directory; Napa County directories are not working. *Jesse: This number is County and City combined*. Client input on 1/30/25
				% expansion target for backyard composting program	0%	*%*	Client input	High	We assume that funding for the existing residential compost program is outside scope and are only considering expansions to the program. Per client feedback, setting the expansion target to 0. This brings costs for labor and materials to support the residential compost program expansion to 0 in the cost estimate. Target can be adjusted to include associated costs in the estimate as needed. *Jesse: Both the City of Napa and the County have reduced the number of backyard composting workshops due to a decrease in participation over the years. A noted reason could be the increase, accessibility, and convenience of curbside cart composting. Their Worm Composting Workshops have become more popular than the traditional compost bin.* Client input on 1/30/25
				~~*Progress toward expansion target at year 5*~~	0%		Jacobs assumption	Low	The progress % are not applicable since there is no expected increase in program expansion.

Measure			Assumptions					
#	Emissions Secto	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
				~~*Progress toward expansion target at year 10*~~	0%		Jacobs assumption	Low	The progress % are not applicable since there is no expected increase in program expansion.
				~~*Progress toward expansion target at year 15*~~	0%		Jacobs assumption	Low	The progress % are not applicable since there is no expected increase in program expansion.
				~~*Progress toward expansion target at year 20*~~	0%		Jacobs assumption	Low	The progress % are not applicable since there is no expected increase in program expansion.
				~~*Labor to set up expansion of backyard compost program*~~	*0*	*FTEs over task duration*	Client input	High	Updated to zero since staff indicates no set up for compost program expansion is needed
				Labor for adopting Reusable Food Ware and Waste Reduction Ordinance	*0.5*	*FTEs over task duration*	Client Input	Moderate	Includes minor revisions to county ordinance plus coordination with individual jurisdictions to adopt their own ordinances based on the county's. Comment from R. Melendez: from M2 (BE-5), the labor for initial adoption of a Building Energy Reach Code Ordinance was only 0.08 FTE, and that measure needs updated ordinances every three years. The County's Reusable Foodware and Waste Reduction Ordinance is already adopted, and the labor for other jurisdictions to adopt a similar ordinance is assumed to be low, per County guidance. The labor for ongoing enforcement was approved by the County. After Discussion on 4/2, leaving this at 0.5 FTE to account for coordination with jurisdictions adopting their own ordinances per County guidance.
				Labor for ongoing enforcement of Reusable Food Ware and Waste Reduction Ordinance	*0.5*	*FTEs over task duration*	Jacobs Industry Best Practice	Low	FTE estimate does not include costs to private owners. Ordinance may require facility owners to organize their own compost pickup.
				Manage feasibility study to adopt Reusable Food Ware and Waste Reduction Ordinance in all cities	*0.25*	*FTEs over task duration*	Jacobs Industry Best Practice		
				Contracted feasibility study to adopt Reusable Food Ware and Waste Reduction Ordinance in all cities	*$ 50,000*	*USD*	Jacobs Industry Best Practice		One time fee. Reviewed with Jacobs team and consistent with industry best practices.

	Measure			Assumptions					
#	Emissions Secto	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
									Deborah: This is higher for the City of Napa. I can contact our solid waste team if needed, but we have multiple staff working on this issue. I think this can be increased to 1 FTE. Client input on 1/31/2025. Title changed to "Labor to expand commercial food waste diversion program"(It was noted that all jurisdictions should have a program in place already. Client Comment 4/2/2025. (D. Elliott))
				Labor to expand commercial food waste diversion program	*1.0*	*FTEs over task duration*	Client input	Moderate	
				Technician labor to implement waste bin audit program	*1.0*	*FTEs over task duration*	Jacobs assumption	Low	No material costs for audit program are included. Labor for technician to complete audits. All audits are completed manually by a field technician.
				Labor to manage and evaluate effectiveness of commercial food waste diversion program	*1.25*	*FTEs over task duration*	Jacobs Industry Best Practice	Low	Reviewed with Jacobs team and consistent with industry best practices. Labor for project management, reviewing audit reports, aggregate findings, annually review program effectiveness, and adjust metrics as needed
				Labor for SB1383/Edible Food Recovery Program Implementation and Management	*1.25*	*FTEs over task duration*	Client input	Moderate	Deborah: This Probably should be higher for City of Napa, 1 FTE. Client input on 1/16/25. Per comments received 3/12 and discussion 4/2, increasing to 1.25 FTE to account for required coordination with individual jurisdictions.
				Average labor rate (all-in cost)	*140*	*USD/hr*	Jacobs assumption	Moderate	Assumes internal labor for all program development and management labor costs. Assumes no consultant or contractor labor costs.

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Estimate #: 6
Emissions Sector: Solid Waste
Strategy: Zero Waste
Measure: Increase diversion of solid waste to achieve >80% diversion from landfills by 2035

**red text denotes cells with formulas that must be reviewed and potentially manually updated with any updates to Program Outline or Inputs Matrix tab inputs

Parameters and Assumptions

Demographic

Existing enrolled households in backyard compost progra	90		
Existing annual material costs for backyard compost progr	$	5,100	
Existing labor for management of backyard compost progr	0.011		FTE
% expansion target for backyard composting program	0%		
new households enrolled in program based on expansion t	0		

Adoption

Year 5		
Residential compost program expansion	0%	of all homes in implementation area

Year 10		
Residential compost program expansion	0%	of all homes in implementation area

Year 15		
Residential compost program expansion	0%	of all homes in implementation area

Year 20		
Residential compost program expansion	0%	of all homes in implementation area

Material Costs

Material costs for compost program expansion	
Compost program costs/enrolled household/year	$56.67
Feasibility to adopt Reusable Food Ware and Waste Reduc	$50,000

Program Costs

	Years	FTEs	Duration (years)	Avg Labor Rate,	Cost
Labor to set up expansion of backyard compost program	0	0	1	$ 140	$0
Labor for adopting Reusable Food Ware and Waste Reduction Ordinance	0 to 1	0.50	2	$ 140	$280,000
Labor for ongoing enforcement of Reusable Food Ware and Waste Reduction Ordinance	2 to 20	0.50	19	$ 140	$2,660,000
Labor for managing feasibility study to adopt Reusable Food Ware and Waste Reduction Ordinance in all cities	0 to 1	0.25	2	$ 140	$140,000
Labor to develop commercial food waste diversion program	0 to 1	1.00	2	$ 140	$560,000
Technician labor to implement waste bin audit program	0 to 1	1.00	2	$ 140	$560,000
Labor to manage and evaluate effectiveness of commercial food waste diversion program	1 to 20	1.25	20	$ 140	$7,000,000
Labor for SB1383/Edible Food Recovery Program Implementation and Management	1 to 20	1.25	20	$ 140	$7,000,000
Additional labor for backyard compost program expansion	1 to 20	0.00	20	$ 140	$0

Total Cost Calculation

	Cumulative Spent				
	Year 5	Year 10	Year 15	Year 20	**Total**
Total material costs for residential compost program expa	$0	$0	$0	$0	$0
Total costs for contracted studies	$50,000	$50,000	$50,000	$50,000	$50,000
Total administrative labor costs	$5,600,000	$9,800,000	$14,000,000	$18,200,000	$18,200,000
Total cost (at today's value)	$5,650,000	$9,850,000	$14,050,000	$18,250,000	**$18,250,000**

	Annual Spent																				
Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Total material costs	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total costs for contracted studies	$50,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total administrative labor costs	$933,333	$933,333	$933,333	$933,333	$933,333	$933,333	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000
Total spent	$941,667	$941,667	$941,667	$941,667	$941,667	$941,667	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000
Real discount rate	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%
Discount Factor	1.00	0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.80	0.79	0.77	0.75	0.74	0.72	0.71	0.69	0.68	0.66	0.65
Annual net present value (annual)	$941,667	$921,396	$901,562	$882,154	$863,165	$844,584	$737,181	$721,312	$705,785	$690,591	$675,726	$661,180	$646,947	$633,020	$619,394	$606,060	$593,014	$580,249	$567,758	$555,536	$543,577
Total net present value	**$14,891,855**																				

Results Considerations

To refine this cost estimate the following could be done:
Review and confirm the expansion target for residential compost program.
Review and confirm assumptions for administrative labor requirements. Ongoing labor requirements for the Commercial Food Waste Diversion Program and Edible Food Recovery Program are the largest drivers of cost.

Additional notes:

- 100% of contract study fees are all included in Year 0.
- Year 0-5 costs are spread evenly across Year 0-5 instead of 1-5 as with the other measures since this is the only measure with significant spending in Year 0
- Incentives to make organic waste pickup less expensive than standard landfill pickup are not included in program.
- Additional air space freed up in landfills may result in savings that offset some of the associated program costs. The changes in landfill infrastructure are not included in this measure or cost estimate.

Estimate #: 7
Emissions Sector: Water/Waste Water
Strategy: Waste Water Treatment
Measure: Reduce fugitive methane emissions from Wastewater Treatment Plants (WWTPs)

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Program Labor Cost Components

The inputs here will be the basis for the estimated cost of labor (administrative, engineering, planning, consultant, etc.) associated with setting up and running the program.

Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Set up Tasks	Measure-Action ID	Duration, yr.	Timeline
Develop evaluation program for options to reduce fugitive emissions for WWTPs without waste-to-energy systems	*WW-1*	*1*	*2032*

Ongoing Program Management Tasks		Duration, yr.	Timeline
Evaluate and periodically update program	*WW-1*	*14*	*2032 - 2045*
Program implementation/oversight/audit evaluations (Assumes audits are performed by existing onsite staff with analysis and follow up by the county/jurisdictions)	*WW-1*	*14*	*2032 - 2045*

Program Material Cost Components

The inputs here will inform the basis for the cost of variable components (program participation, construction projects, capital expenditures) dependent on program targets.

Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Goal		Target	Deadline
NONE			

Data Request Tab Instructions:

Input required	No input needed
Input optional (to override **preliminary** assu	Updated by Jacobs based on industry best practices Updated per 3/12 staff comments and follow up discussion 4/2/25
client-provided value	

Jacobs

	Measure			Assumptions					
#	Emissions Sector	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
7	Water/Wastewater	Waste Water Treatment	Reduce fugitive methane emissions from Wastewater Treatment Plants (WWTPs)	*Waste water treatment plants without waste-to-energy*	*6.00*	*quantity*	Client input	Low	Assumption: 2 Napa County facilities (NBRID and LBRID) plus 4 smaller jurisdictions/private WWTP included in program. 5 active NPDES permits per the state water resource control board. *Jesse: Napa County's 2 facilities (NBRID and LBRID) are not equipped with waste-to-energy. There are challenges in the engineering economics for methane gas recovery for a facility of this size according to District Engineer of Water Resources. It is likely that the smaller jurisdictions face similar challenges with bringing waste-to-energy to their wastewater treatment plants.* Client input on 1/30/25
				Labor to evaluate audits and administer program	*0.25*	*FTEs over task duration*	Client input	Moderate	Labor to manage, evaluate, and administer audit program. Assumes contracted baseline assessment plus facility-administered updates every 3 years, with oversight and evaluation by the county/jurisdictions. If 6 plants are included in program, 2 audits would be completed per year. LOE reduced per County comment for assuming existing onsite staff will implement this program. 4-2-2025.
				Labor for program monitoring and updates	*0.10*	*FTEs over task duration*	Jacobs Industry Best Practice	Moderate	Project manager to oversee, report on, and update program as needed

Measure			Assumptions					
#	Emissions Sector	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
				Labor for program setup	*1.50*	*FTEs over task duration*	Jacobs Industry Best Practice	Moderate	Assumes a project manager and full time assistant. Program setup includes development of standard tools & templates (e.g. leak detection work practice forms) to implement industry best practices, especially for smaller facilities. Labor for program set-up was not reduced but labor to do ongoing evaluations were per client comment 4/2/2025. If existing audit programs are already established this set-up program may be reduced as appropriate based on current level of existing program.
				Target percent of applicable plants to audit per year	*33%*		Jacobs assumption	Moderate	Measure description specifies audits every 3 years. Assume audits are staggered so a fixed number are completed per year.
				Contract fee for initial baseline audits	*########*	*USD/audit*	Jacobs Industry Best Practice	Moderate	Assumes a contracted baseline evaluation for each plant is included as a lump sum fee. Internal resources are assumed to manage periodic (every 3 yr) updates to the baseline evaluations.
				Average labor rate (all-in cost)	*140*	*USD/hr*	Jacobs assumption	Moderate	Assumes internal labor for all program development and management labor costs. Assumes no consultant or contractor labor costs.

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Estimate #: 7
Emissions Sector: Water/Waste Water
Strategy: Waste Water Treatment
Measure: Reduce fugitive methane emissions from Wastewater Treatment Plants (WWTPs)

**red text denotes cells with formulas that must be reviewed and potentially manually updated with any updates to Program Outline or Inputs Matrix tab inputs

Parameters and Assumptions

Demographic

Waste water treatment plants without	6.00
% plants audited per year	33%

Material Costs & Contract Fees

Average contract Fee for baseline ass	$100,000

Program Costs

	Years	FTEs	Duration (years	Avg Labor Rate,	Cost
Labor to evaluate audits and administ	7 to 20	0.25	14	$140	$980,000
Labor for program monitoring and upd	7 to 20	0.10	14	$140	$392,000
Labor for program setup	7	1.50	1	$140	$420,000

Total Cost Calculation

Cumulative Spent

	Year 5	Year 10	Year 15	Year 20	**Total**
Total administrative labor costs	$0	$812,000	$1,302,000	$1,792,000	$1,792,000
Total material costs & contract fees	$0	$600,000	$600,000	$600,000	$600,000
Total cost (at today's value)	$0	$1,412,000	$1,902,000	$2,392,000	**$2,392,000**

Annual Spent

Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Total administrative labor costs	$0	$0	$0	$0	$0	$0	$162,400	$162,400	$162,400	$162,400	$162,400	$98,000	$98,000	$98,000	$98,000	$98,000	$98,000	$98,000	$98,000	$98,000	$98,000
Total material costs & contract fees	$0	$0	$0	$0	$0	$0	$120,000	$120,000	$120,000	$120,000	$120,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total spent	$0	$0	$0	$0	$0	$0	$282,400	$282,400	$282,400	$282,400	$282,400	$98,000	$98,000	$98,000	$98,000	$98,000	$98,000	$98,000	$98,000	$98,000	$98,000
Real discount rate	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%
Discount Factor		0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.80	0.79	0.77	0.75	0.74	0.72	0.71	0.69	0.68	0.66	0.65
Annual net present value (annual)	$0	$0	$0	$0	$0	$0	$247,833	$242,498	$237,278	$232,170	$227,172	$77,138	$75,477	$73,852	$72,263	$70,707	$69,185	$67,696	$66,238	$64,813	$63,417
Total net present value	**$1,887,738**																				

Results Considerations

To refine this cost estimate the following could be done:
- Review and confirm the number of plants without waste-to-energy and annual audits target.
- Review and confirm administrative labor requirements. These are the largest driver of cost. Current costs assume that audit will be done by facility staff and reviewed by County. The additional costs to the facility are not included per discussion on 4/2/2025. New program set up costs are included.

Additional notes:

- Program includes all public and private WWTP without waste-to-energy systems in County
- Assumes that initial baseline assessments are contracted studies (lump sum fee basis) but county personnel/WWTP personnel perform the periodic updates (FTE basis).
- Implementation of recommended actions from plant evaluations are not included in the estimate.
- Assumes that an optimization program, energy use / time of use would not be used to auto collect the data within the next 10 years.
- Assumes that smaller plants audits would be established as a base case to simplify the process. Rather than a full audit they would be set up as a standard work practices (example leak detection work practice forms) and compared year over year. Forms would be tied to a use of gas and standard inputs based on their configuration. The template could state performance metrics based on best practices to enable year over year comparisons
- Labor assumes this is a new program and staff to complete these efforts are not already included in County Plans.

Estimate #: 8
Emissions Sector: Agriculture and Open Space
Strategy: Reduce GHGs from Agricultural Equipment
Measure: Reduce fossil fuel consumption in field equipment

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Program Labor Cost Components

The inputs here will be the basis for the estimated cost of labor (administrative, engineering, planning, consultant, etc.) associated with setting up and running the program.

Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Set up Tasks	Measure-Action ID	Duration, yr.	Timeline
Evaluate existing BAAQMD incentive programs for electric agriculture equipment/retiring fossil fuel equipment	*AG-1-a1*	*4*	*2027-2030*
Website updates to advertise available incentives	*AG-1-a3*	*2*	*2027-2028*
Develop irrigation pump replacement program	*AG-1-b1*	*3*	*2027-2029*

Ongoing Program Management Tasks		Duration, yr.	Timeline
Community outreach to encourage retirement of fossil fuel equipment	*AG-1-a2*	*16 yrs*	*2027 - 2045*
Periodic website updates for up-to-date incentive info	*AG-1-a3*	*0.1, annually*	*2028 - 2045*
Irrigation pump replacement program implementation and management	*AG-1-b1*	*16 yrs*	*2029 - 2045*
Program management of incentives for electric/solar equipment	*AG-1-b2*	*16 yrs*	*2030 - 2045*

Program Material Cost Components

The inputs here will inform the basis for the cost of variable components (program participation, construction projects, capital expenditures) dependent on program targets.

Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Goal		Target	Deadline
Electric equipment incentives for 100% transition of eligible agriculture equipment	*AG-1-a1*	*100% eligible equipment replaced*	2045
Community outreach for encouragement of fossil fuels (brochures, advertising)	*AG-1-a2*	*100% of agricultural community reached*	2045
Incentives for irrigation pump replacement up to 100% transition (electric pump replacement rebate/voucher)	*AG-1-b1*	*50% of fossil fuel pumps replaced*	2045
Incentives for biofuel irrigation pumps to 100% transition (biofuel purchase rebate/voucher)	AG-1-b2	*50% fossil fuel pumps replaced*	2045

Data Request Tab Instructions:

Input required	No input needed		Updated per 3/12 staff comments and follow up discussion 4/2/25
Input optional (to override **preliminary** as		Jacobs based on industry best	client-provided value

Jacobs

Measure				Assumptions				
#	Emissions Sector	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
8	Agriculture and Ope	Reduce GHGs from A	Reduce fossil fuel consumption in field equipment	Cost per incentive - agriculture equipment	$75,000	USD	Client input	High	Standard NRCS list or vineyard specific definition of equipment types. Assumption that this is per individual incentive and that this program includes the replacement of tractors and UTVs.
				~~Additional qualifying incentives - agriculture equipment~~	~~-~~	~~quantity~~	~~Client input~~		~~Undefined at this point. Not included in estimate. Client marked unknown on 1/31/25~~
				Cost support for tractor equipment	90%	% of eligible co	Jacobs Industry Best Practice		Assumes Tier 0, Tier 1, Tier 2 tractors must be scrapped; farms less than 100 acres will be considered "small farmers" and thus eligible for pre-owned equipment; Tier 0 and Tier 1 tractors may be replaced with certified pre-owned Tier 3 or cleaner equipment. The amount of incentive provided is variable and should be updated based on availability of funding sources.
				Cost support for UTV equipment	75%	% of eligible co	Jacobs Industry Best Practice		Diesel or gasoline UTVs can be replaced with electric models. The amount of incentive provided is variable and should be updated based on availability of funding sources.

	Measure			Assumptions					
#	Emissions Sector	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
									This cost includes estimated costs per year for the pump and everything associated to make a solar pump function in the service: emitter package, solar package. This number has been updated to be based on the NAPA Irrigation System Overview, where irrigation accounts for 70% of farm electricity use. Variable frequency drives (VFDs) – most vineyards use well pumps, (vertical turbine or submersible pumps) to get water out of the ground, with booster pumps (for pressure) to irrigate from groundwater.
				Cost per incentive - electric/solar/biofuel irrigation pumps	$75,000	USD	Client input	High	
				~~Qualifying incentives - electric/solar irrigation pumps~~	~~unknown~~	~~quantity~~	~~Client input~~		~~Assume eligible incentives per grower per farm will be limited to $75,000 per rational above. Client marked unknown on 1/31/25. In terms of the mechanism that will be used to retire fossil fuel ag equipment: Brenda Hom on 10/23/24 "This hasn't been planned yet. It will depend on what funding the county can find/obtain. E.g., BAAQMD program may be a trade in one. Feel free to do additional research on this."~~
				~~Qualifying incentives - biofuel irrigation pumps~~	~~unknown~~	~~quantity~~	~~Client input~~		~~assume eligible incentives per grower per farm will be limited to $75,000. Client marked unknown on 1/31/25~~

	Measure			Assumptions					
#	Emissions Sector	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
									Assumes this covers the new pump; Tier 3 pumps are eligible to be replaced; replacement engines must be emission certified to a Tier 4 level, new, certified, off-road engine; projects will be funded based on a dollar per gross/brake horsepower basis, based on the horsepower of new replacement diesel engine not to exceed 90% eligible costs. The dollar per horsepower payment will be $120/HP less than 125 HP and $100/HP for 125HP or more. The amount of incentive provided is variable and should be updated based on availability of funding sources.
				Cost support for pump conversion from diesel/natural gas to electric/biofuel	90%	% of eligible co	Jacobs Industry Best Practice		

	Measure			Assumptions					
#	Emissions Sector	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
									For irrigation conversion to solar, the incentive will cover the additional equipment, in addition to the pump, required to convert a system to solar. A solar irrigation system will include solar panels, inverter, pump, controller, batteries, sensors, piping, and emitters; Solar panels cost $3k-$15k, accessories (batteries, inverter, etc.) cost $1-5k, installation costs $1-10k. Because this is a new management technique, it is assumed that the incentive will take into account the use of additional management systems/planning; Cost of drilling a commercial well ($50-10/ft) is not included in this program. The amount of incentive provided is variable and should be updated based on availability of funding sources.
				Cost support for pump conversion from diesel/natural gas to solar	90%	% of eligible co	Jacobs Industry Best Practice	High	
				Number of county farms less than 180 acres	1,545	quantity	Jacobs research	High	Primary target of incentive programs are for farms less than 180 acres; 87% of total farms Assume all farms eligible for incentives if they meet individual program requirements
				Number of county farms	1,772	quantity	Jacobs research	High	

Measure			Assumptions					
#	Emissions Sector	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
									Assume funding source has limited reporting requirements - FTE not impacted by funding source. FTE will increase with increased reporting requirement (up to 10 hrs. / month). Response to R. Melendez comment: This is for the management of incentives for electric/solar equipment, which is assumed to be an expansion of the BAAQMD program. The LOE may vary greatly based on the extent of the expansion / level of implementation by the county.
				Management of incentive program - agriculture equipment	0.50	FTEs over task	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Management of incentive pr	0.50	FTEs over task	Jacobs Industry Best Practice	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Periodic website updates	0.10	FTEs over task	Jacobs Industry Best Practice	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Community outreach mater	$ 5,000	USD	Client input	High	Client input on 1/31/25
				Community education and c	0.25	FTEs over task	Jacobs Industry Best Practice	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Evaluate existing BAAQMD i	0.05	FTEs over task	Jacobs Industry Best Practice	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Website setup to advertise available incentives	0.10	FTEs over task duration	Jacobs Industry Best Practice	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Develop irrigation pump replacement program	0.25	FTEs over task duration	Jacobs assumption	Low	Assumes program structure can be leveraged from existing lawn and garden trade-in program. Assumes a direct-to-farmer incentive - equipment dealers not involved.

	Measure			Assumptions					
#	Emissions Sector	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
				incentive program adoption at year 5 for ag equipment	5%	%	Jacobs Industry Best Practice	Low	Reviewed with Jacobs team and consistent with industry best practices.
				incentive program adoption at year 10 for ag equipment	33%	%	Jacobs Industry Best Practice	Low	Reviewed with Jacobs team and consistent with industry best practices.
				incentive program adoption at year 15 for ag equipment	67%	%	Jacobs Industry Best Practice	Low	Reviewed with Jacobs team and consistent with industry best practices.
				incentive program adoption at year 20 for ag equipment	99%	%	Jacobs Industry Best Practice	Low	Reviewed with Jacobs team and consistent with industry best practices.
				incentive program adoption at year 5 for pumps	3%	%	Jacobs Industry Best Practice	Low	Reviewed with Jacobs team and consistent with industry best practices.
				incentive program adoption at year 10 for pumps	10%	%	Jacobs Industry Best Practice	Low	Reviewed with Jacobs team and consistent with industry best practices.
				incentive program adoption at year 15 for pumps	30%	%	Jacobs Industry Best Practice	Low	Reviewed with Jacobs team and consistent with industry best practices.
				incentive program adoption at year 20 for pumps	50%	%	Jacobs Industry Best Practice	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Average labor rate (all-in cost)	140	USD/hr	Jacobs assumption	Moderate	Assumes internal labor for all program development and management labor costs. Assumes no consultant or contractor labor costs.

Estimate #: 8
Emissions Sector: Agriculture and Open Space
Strategy: Reduce GHGs from Agricultural Equipment
Measure: Reduce fossil fuel consumption in field equipment

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**red text denotes cells with formulas that must be reviewed and potentially manually updated with any updates to Program Outline or Inputs Matrix tab inputs

Parameters and Assumptions

Demographic

Total number of farms in the county	1772
Number of farms less than 180 acres	1545

Adoption

Year 5		
Land owner adoption of ag equipment	5%	of all landowners in implementation area
Land owner adoption of pumps conversion	3%	of all landowners in implementation area

Year 10		
Land owner adoption of ag equipment	33%	of all landowners in implementation area
Land owner adoption of pumps conversion	10%	of all landowners in implementation area

Year 15		
Land owner adoption of ag equipment	67%	of all landowners in implementation area
Land owner adoption of pumps conversion	30%	of all landowners in implementation area

Year 20		
Land owner adoption of ag equipment	99%	of all landowners in implementation area
Land owner adoption of pumps conversion	50%	of all landowners in implementation area

Incentives & Material Costs

Average Grant Award	
Cost per incentive - agriculture equipment	$75,000
Cost per incentive - electric/solar/biofuel irrigation pumps	$75,000

Material Costs	
Community outreach annual material costs	$5,000

Program Costs

	Years	FTEs	Duration (years)	Avg Labor Rate, $/hr	Cost
Management of incentive program - agriculture equipment	5 to 20	0.50	16	$140	$2,240,000
Management of incentive program - irrigations pumps	5 to 20	0.50	16	$140	$2,240,000
Periodic website updates	3 to 20	0.10	18	$140	$504,000
Community education and outreach	2 to 20	0.25	19	$140	$1,330,000
Evaluate existing BAAQMD incentive programs	2 to 5	0.05	4	$140	$56,000
Website setup to advertise available incentives	2 to 3	0.10	2	$140	$56,000
Develop irrigation pump replacement program	2 to 4	0.25	3	$140	$210,000

Total Cost Calculation

	Cumulative Spent				
	Year 5	Year 10	Year 15	Year 20	**Total**
Total Agricultural Equipment Incentive Costs	$6,645,000	$43,857,000	$89,043,000	$131,571,000	$131,571,000
Total Electric/Solar/Biofuel Irrigation Pumps Incentive Costs	$3,987,000	$13,290,000	$39,870,000	$66,450,000	$66,450,000
Total Community Outreach Materials Costs	$20,000	$45,000	$70,000	$95,000	$95,000
Total Administrative Labor Costs	$966,000	$2,856,000	$4,746,000	$6,636,000	$6,636,000
Total cost (at today's value)	$11,618,000	$60,048,000	$133,729,000	$204,752,000	**$204,752,000**

Annual Spent

Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Total Agricultural Equipment Incentive Costs	$0	$1,329,000	$1,329,000	$1,329,000	$1,329,000	$1,329,000	$7,442,400	$7,442,400	$7,442,400	$7,442,400	$7,442,400	$9,037,200	$9,037,200	$9,037,200	$9,037,200	$9,037,200	$8,505,600	$8,505,600	$8,505,600	$8,505,600	$8,505,600
Total Electric/Solar Irrigation Pumps Incentive Costs	$0	$797,400	$797,400	$797,400	$797,400	$797,400	$1,860,600	$1,860,600	$1,860,600	$1,860,600	$1,860,600	$5,316,000	$5,316,000	$5,316,000	$5,316,000	$5,316,000	$5,316,000	$5,316,000	$5,316,000	$5,316,000	$5,316,000
Total Community Outreach Materials Costs	$0	$4,000	$4,000	$4,000	$4,000	$4,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000
Total Administrative Labor Costs	$0	$193,200	$193,200	$193,200	$193,200	$193,200	$378,000	$378,000	$378,000	$378,000	$378,000	$378,000	$378,000	$378,000	$378,000	$378,000	$378,000	$378,000	$378,000	$378,000	$378,000
Total spent	$0	$2,323,600	$2,323,600	$2,323,600	$2,323,600	$2,323,600	$9,686,000	$9,686,000	$9,686,000	$9,686,000	$9,686,000	$14,736,200	$14,736,200	$14,736,200	$14,736,200	$14,736,200	$14,204,600	$14,204,600	$14,204,600	$14,204,600	$14,204,600
Real discount rate	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%
Discount Factor		0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.80	0.79	0.77	0.75	0.74	0.72	0.71	0.69	0.68	0.66	0.65
Annual net present value (annual)	$0	$2,273,581	$2,224,639	$2,176,751	$2,129,893	$2,084,044	$8,500,395	$8,317,412	$8,138,368	$7,963,178	$7,791,759	$11,599,136	$11,349,448	$11,105,135	$10,866,082	$10,632,174	$10,028,008	$9,812,141	$9,600,921	$9,394,247	$9,192,023

Total net present value	$155,179,334

Results Considerations

To refine this cost estimate the following could be done:

- Review and confirm assumptions related to agricultural equipment and irrigation pump incentives. These are the largest driver of cost and at the discretion of how much existing funding is available or additional funding can be provided by the County. This includes specifically the % per incentive the County is willing to provide under this program.
- Review and confirm administrative labor requirements.

Additional notes:

- The solar and biofuel irrigation pump replacement incentive is a single program; farmers that take advantage of the solar incentive cannot qualify for a separate biofuel incentive.
'- Labor and incentive costs realized by the county/jurisdictions will likely be only some fraction of the total if funding is primarily through the existing BAAQMD program or other external funding source.

Estimate #: 9
Emissions Sector: Agriculture and Open Space
Strategy: Increase Carbon Storage
Measure: Enhance carbon farming practices in the region

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Program Labor Cost Components

The inputs here will be the basis for the estimated cost of labor (administrative, engineering, planning, consultant, etc.) associated with setting up and running the program.

Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Set up Tasks	Measure-Action ID	Duration, yr.	Timeline
Establish university and community partnerships	*AG-3-a 1*	*2*	*2026 - 2027*
develop webpage on RCAAP website	*AG-3*	*1*	*2026*
develop other educational resources	*AG-3-a2*	*1*	*2026*
categorize carbon capture potential of conservation easements for natural areas associated with agricultural lands	*AG-3-a2*	*2*	*2026 - 2027*
develop grant program to support local CFP partners	*AG-3-a3*	*2*	*2026 - 2027*
develop annual workshop program	*AG-3-a2*	*3*	*2026-2028*
Develop technical assistance guidelines	*AG-3-a3*	*3*	*2026-2028*
Collaborate with Napa RCD to develop CFP for all agricultural land categories	*AG-3-a3*	*3*	2026-2028

Ongoing Program Management Tasks		Duration, yr.	Timeline
periodic webpage/resource update	*AG-3-a2*	*0.1 annually, 10*	*2026 - 2035*
implementation/management of grant program for local CFP partners	*AG-3-a3*	*8*	*2028 - 2035*
Provide grant application assistance to income-qualified farmers/ranchers	*AG-3-a3*	*8*	*2028 - 2035*
Provide grant application assistance for applicants that commit to annual reporting	*AG-3-a3*	*8*	*2028 - 2035*
implementation and management of workshop program	*AG-3-a2*	*8*	*2028 - 2035*
periodic review and update of incentives and grants, analyze and disseminate annual reporting data from CFP grant program partic	*AG-3-a3*	*8*	*2026-2035*
Support local supply chain for plant stock and composting	*AG-3-a4*	*8*	2026-2035

Program Material Cost Components

The inputs here will inform the basis for the cost of variable components (program participation, construction projects, capital expenditures) dependent on program targets.

Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Goal		Target	Deadline
Grants to support local CFP partners	*AG-3-a3*	*75% of farmers qualify*	2035
material costs for supply chain on-farm composting program	*AG-3-a4*	*50% of farmers qualify*	2035
material costs for supply chain plant stock composting program	*AG-3-a4*	*3% of farmers qualify*	2035

Data Request Tab Instructions:

Input required	No input needed		client-provided value
Input optional (to override **preliminary** assu		Updated by Jacobs based on industry best	client-provided value superseded with more specific information. Updated per 3/12 staff comments and follow up discussion 4/2/25

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Measure			Assumptions					
#	Emissions Sector	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
9	Agriculture and Open Space	Increase Carbon Storage	Enhance carbon farming practices in the region	*Average CFP grant award*	*$10,000*	*USD*	Client input	Moderate	Jesse: To deliver complete Carbon Farming Plan. Based on conversations with RCD. Client input on 1/31/25
				Qualifying CFP grants/year	*20*	*quantity*	Client input	Moderate	Client input on 1/31/25
				~~*Support for local supply chain develo*~~	~~*$1,000*~~	~~*USD/acre*~~	~~Client input~~	~~Moderate~~	Client input: $500-1000/acre. Using high end of range as a conservative estimate. Funding directly to farmer to implement CFD. Client input on 1/31/25. Number not used, due to more specific values provided after county input.
				Support for onsite compost local sup	*$270*	*USD/CY*	Jacobs Industry Best Practice	Moderate	NRCS conservation payments for CSP 336 Soild Carbon Amendment reimbursed CA farmers up to this amount for compost produced onsite
				Support for offsite compost local sup	*$1,698*	*USD/CY*	Jacobs Industry Best Practice	Moderate	NRCS conservation payments for CSP 336 Soil Carbon Amendment reimbursed CA farmers up to $270.21/CY up to this amount for compost procured from off-site
				Average compost application rate	*4.5*	*tons/acre*	Jacobs research	High	https://agroecology.berkeley.edu/resources/compost-bene https://www.peachcountrytractor.com/pages/mulch-calculator#:~:text=Length%20x%20Width%20=%20Square%20Feet,yd).
				Conversion of cubic yards per ton	*1.4*	*CY/ton*	Jacobs research	High	
				Assumed Average Onsite Compost U	*90%*	*%*	Jacobs assumption	Low	
				Assumed Average Offsite Compose U	*10%*	*%*	Jacobs assumption	Low	
				Compost local supply chains support	*5*	*years/farmer*	Jacobs Industry Best Practice	Moderate	Assume 100% of the farm acres owned by farmers adopting CSP 336 utilize the incentive
				Support for nursery stock local supply	*20%*	*% of start-up cost*	Jacobs Industry Best Practice	Moderate	

Measure			Assumptions					
#	Emissions Sector	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
									Brenda Hom 10/23/24 "Probably some additional funding to ensure there are enough native plants to plant. But they will need to find that funding, which might be under Amy Lapin's scope to provide" and Erik de Kok 10/23/24 "Yes. The actual funding source is not known yet. But I think the question is whether program involves seeking financial support and staff time associated with that, which would be a correct assumption." Jacobs assumption: Number for vineyard nursery stock. Assumes Vines at $10,108/acre; custom plant, dig, place cartons, plant vines at $3,888/acre; one time cost of vineyard removal and clean field by hand at $4,500/acre; soil amendments at $870/acre; rip 3x at $975/acre; disc 3x at $270/acre; level at $300/acre.
				Start-up cost for establishing nursery	*$20,911*	*USD/acre*	Jacobs Industry Best Practice	Moderate	
				Average acres per farm	*137*	*acres/parcel*	Jacobs research	High	https://www.nass.usda.gov/Publications/AgCensus/2022/(
				Total crop land in Napa County	*68,190*	*acres*	Jacobs research	High	Just cropland acreage; total farm acreage is 242,403 acres
				Total vineyard land in Napa County	*28,890*	*acres*	Jacobs research	High	Just vineyard acreage
				Establish university and community p	*0.20*	*FTEs over task dur*	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices.
				RCAAP webpage development	*0.10*	*FTEs over task dur*	Jacobs assumption	Low	Per 4/2/25 staff discussion, LOE reduced to only include adding a single webpage to an existing website.
				Periodic webpage updates	*0.10*	*FTEs over task dur*	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Other educational resource developr	*0.25*	*FTEs over task dur*	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Categorize carbon capture potential	*0.50*	*FTEs over task dur*	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Develop grant program	*0.50*	*FTEs over task dur*	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Implement and manage grant progra	*1.50*	*FTEs over task dur*	Jacobs Industry Best Practice	Moderate	
				Grant application assistance	*0.50*	*FTEs over task dur*	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Develop annual workshop program	*0.25*	*FTEs over task dur*	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Implement and manage workshop pr	*0.25*	*FTEs over task dur*	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Develop technical assistance guideli	*0.25*	*FTEs over task dur*	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices.

Measure			Assumptions					
#	Emissions Sector	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
									Brenda Hom 10/23/24 "This will most likely be realized as additional funding for Napa RCD to provide the proposed assistance. Napa RCD is already doing the proposed action, they just need more staff. Probably another 2-4 staff over the next 10 years." Jacobs has dived the 2-4 staff requirement by individual function. Reviewed with Jacobs team and consistent with industry best practices.
				Collaborate with Napa RCD to develo	*1.00*	*FTEs over task dur*	Jacobs assumption	Low	
				Analyze data from program participar	*1.00*	*FTEs over task dur*	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Support local supply chain for plant s	*0.75*	*FTEs over task dur*	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Average labor rate (all-in cost)	*140*	*USD/hr*	Jacobs assumption	Low	Assumes internal labor for all program development and management labor costs. Assumes no consultant or contractor labor costs.
				Number of farms (including vineyards) in program area	*1772*	# of applicable par	Jacobs research	High	https://www.nass.usda.gov/Publications/AgCensus/2022/(
				Land owner adoption of compost sup	*10%*	%	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Land owner adoption of compost sup	*25%*	%	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices. Assume that 50% of all vineyard acres in the county will utilize the compost development incentive . Assume that this incentive will be a continual payment to each farmer for up to 5 years. Assume that the first three year's adoption rate will be 10%, the next three years will be an additional 15%, and the final four years will be 25%.
				Land owner adoption of compost sup	*50%*	%	Jacobs assumption	Low	
				Land owner adoption of compost sup	*50%*	%	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Land owner adoption of native plant s	*1%*	%	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Land owner adoption of native plant s	*2%*	%	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices. CDFA has offered a similar program. Assume the goal is to establish vineyard nursery stock. Assume 3% of all vineyard acres (2,889 acres) adopt and develop nursery stock for the local supply chain by year 10.
				Land owner adoption of native plant s	*3%*	%	Jacobs assumption	Low	
				Land owner adoption of native plant s	*3%*	%	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices.

Estimate #: 9
Emissions Sector: Agriculture and Open Space
Strategy: Increase Carbon Storage
Measure: Enhance carbon farming practices in the region

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**red text denotes cells with formulas that must be reviewed and potentially manually updated with any updates to Program Outline or Inputs Matrix tab inputs

Parameters and Assumptions

Demographic

Land types included:	only vineyard acres considered for local supply chain support	
Number of farms and vineyards in program a	1,772	# land parcels
Total crop land in farms	68,190	acres
Average crop land size per farm	38	acres
Total vineyard acres in county	28,890	acres

Adoption

Year 3		
Land owner adoption of compost local supp	10%	of all landowners in implementation area
Land owner adoption of native plant stock s	1%	of all landowners in implementation area

Year 6		
Land owner adoption of compost local supp	25%	of all landowners in implementation area
Land owner adoption of native plant stock s	2%	of all landowners in implementation area

Year 10		
Land owner adoption of compost local supp	50%	of all landowners in implementation area
Land owner adoption of native plant stock s	3%	of all landowners in implementation area

Year 20		
Land owner adoption of compost local supp	50%	of all landowners in implementation area
Land owner adoption of native plant stock s	3%	of all landowners in implementation area

Grants & Material Costs

Average Grant Award			
CFP Grant Award	$10,000		USD/grant
Qualifying CFP Grants/Year	20		
Compost Supply Chain Program Onsite Compost Support	$270		USD/CY
Compost Supply Chain Program Offsite Compost Support	$1,698		USD/CY
Assumed Average Onsite Compost Used	90%		
Assumed Average Offsite Compose Used	10%		
Average Compost Supply Chain Support in $/ton	$578		USD/ton
Average Compost Application Rate		4.50	ton/acre
Compost Supply Chain Program Average Support	$2,602		USD/acre
Compost Supply Chain Support Duration	5		years/farmer
Compost Supply Chain Annualized Support Costs	$1,301		$/acre/yr
Native Plant Supply Chain Program Startup Costs	$20,911		USD/acre
Maximum eligible support for native plant	20%		% of startup costs

Program Costs

	Years	FTEs	Duration (years)	Avg Labor Rate, $/hr	Cost
Establish university and community partnerships	1 to 2	0.20	2	$140	$112,000
RCAAP webpage development	1	0.10	1	$140	$28,000
Periodic webpage updates	1 to 10	0.10	10	$140	$280,000
Other educational resource development	1	0.25	1	$140	$70,000
Categorize carbon capture potential of natural easements	1 to 2	0.50	2	$140	$280,000
Develop grant program	1 to 2	0.50	2	$140	$280,000
Implement and manage grant program	3 to 10	1.50	8	$140	$3,360,000
Grant application assistance	3 to 10	0.50	8	$140	$1,120,000
Develop annual workshop program	1 to 3	0.25	3	$140	$210,000
Implement and manage workshop program	1 to 3	0.25	3	$140	$210,000
Develop technical assistance guidelines	1 to 3	0.25	3	$140	$210,000
Collaborate with Napa RCD to develop CFP	1 to 3	1.00	3	$140	$840,000
Analyze data from program participants, review and update grant program	1 to 10	1.00	10	$140	$2,800,000
Support local supply chain for plant stock and composting	1 to 10	0.75	10	$140	$2,100,000

Total Cost Calculation

	Cumulative Spent				
	Year 3	Year 6	Year 10	Year 20	**Total**
Total CFP Grant Costs	$600,000	$1,200,000	$2,000,000	$2,000,000	$2,000,000
Total Compost Supply Chain Program Costs	$11,274,979	$28,187,447	$75,166,525	$75,166,525	$75,166,525
Total Native Plant Stock Supply Chain Progra	$1,208,238	$2,416,475	$3,624,713	$3,624,713	$3,624,713
Total administrative labor costs	$4,354,000	$7,588,000	$11,900,000	$11,900,000	$11,900,000
Total cost (at today's value)	$17,437,216	$39,391,922	$92,691,238	$92,691,238	**$92,691,238**

	Annual Spent																			
Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Total CFP Grant Costs	$0	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Compost Supply Chains Program Cost	$0	$3,758,326	$3,758,326	$3,758,326	$5,637,489	$5,637,489	$5,637,489	$11,744,770	$11,744,770	$11,744,770	$11,744,770	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Native Plant Stock Supply Chain Progra	$0	$402,746	$402,746	$402,746	$402,746	$402,746	$402,746	$302,059	$302,059	$302,059	$302,059	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total administrative labor costs	$0	$1,451,333	$1,451,333	$1,451,333	$1,078,000	$1,078,000	$1,078,000	$1,078,000	$1,078,000	$1,078,000	$1,078,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total spent	$0	$5,812,405	$5,812,405	$5,812,405	$7,318,235	$7,318,235	$7,318,235	$13,324,829	$13,324,829	$13,324,829	$13,324,829	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Real discount rate	1.90%	1.90%	1.90%	1.90%	1.90%	1.90%	1.90%	1.90%	1.90%	1.90%	1.90%	1.90%	1.90%	1.90%	1.90%	1.90%	1.90%	1.90%	1.90%	1.90%	1.90%
Discount Factor		0.98	0.96	0.95	0.93	0.91	0.89	0.88	0.86	0.84	0.83	0.81	0.80	0.78	0.77	0.75	0.74	0.73	0.71	0.70	0.69
Annual net present value (annual)	$0	$5,704,029	$5,597,673	$5,493,300	$6,787,497	$6,660,939	$6,536,741	$11,679,987	$11,462,205	$11,248,484	$11,038,748	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total net present value	**$82,209,602**																				

Results Considerations

To refine this cost estimate the following could be done:
Review and confirm assumptions for local compost supply chain support. This is the largest driver of cost.
Review and confirm the number and cost of CFP grants to be issued.
Review adoption rates to see what is expected specific to County. Generally it is understood that these types of programs historically have low adoption rates based on total acres available.

Additional notes:

Comments received from client:
- An annual discount rate of 1.9% is used for this estimate. This is the 10-year real interest rate on US treasury notes and bonds for the 2025 calendar year per OMB Circular No. A-94.

Ascent Cost Estimation
Programmatic Summary of GHG Measures

Napa County RCAAP

Prepared by: A. White, O. Guretta
Prepared for: Erik de Kok
April 11, 2025
Revision 3

The cost include here are not an offer for construction and/or project execution. The costs presented in this estimate are considered Class 4 with an accuracy range of -30% to +50% of the actual cost, according to the Recommended Practice No. 107R-19: Cost Estimate Classification System - As Applied in Engineering, Procurement, and Construction for the Environmental Remediation Industries (AACE International 2021). The cost estimate has been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project will depend on actual labor, material costs, and competitive variable factors. Because of this, project feasibility and funding needs must be carefully reviewed prior to making specific decisions to help ensure proper project evaluation and adequate funding.

Assume funding source has limited reporting requirements - FTE not impacted by funding source. FTE will increase with increased reporting requirement (up to 10 hrs. / month). This is for the management of incentives for electric/solar equipment, which is assumed to be an expansion of the BAAQMD program. The LOE may vary greatly based on the extent of the expansion / level of implementation by the county.

Programmatic costs are estimated based on inputs provided by the County of Napa and assum

401 B Street

Summary of the GHG Mitigation Measures Estimated Costs.

Results are contingent on the accuracy of the input data provided by the County and specific assumptions for each measures should be reviewed for consistency as the measures are further developed.

Summary of Estimated Costs

Measure	Emissions Sector	Strategy	Measure	Net Present Value	Total Cost (Not Discounted)
BE-1 (M1)	Building Energy	Energy Efficiency and Electrification	Develop a comprehensive energy retrofit program to transition existing residential and non-residential buildings to net zero carbon with a target of 25 percent of existing buildings by 2030 and 100 percent by 2045.	$359,870,000	$448,380,000
BE-5 (M2)	Building Energy	Zero Carbon Development	Develop and adopt a Zero-Carbon Buildings Reach Code for New Construction	$1,060,000	$1,330,000
TR-3 (M3)	On-Road Transportation	Low and Zero Emissions Vehicles	Increase access to Zero Emissions Vehicle (ZEV) Fueling Infrastructure	$350,000	$380,000
TR-11 (M4)	On-Road Transportation	Transportation Demand Management (TDM)	Expand Individual Trip TDM Programs	$2,750,000	$3,340,000
OF-3 (M5)	Off-Road Transportation	Electrification and Clean Alternatives	Zero Carbon Construction Equipment - Community	$150,000	$180,000
SW-1 (M6)	Solid Waste	Zero Waste	Increase diversion of solid waste to achieve >80% diversion from landfills by 2035	$14,890,000	$18,250,000
WW-1 (M7)	Water/Waste Water	Waste Water Treatment	Reduce fugitive methane emissions from Wastewater Treatment Plants (WWTPs)	$1,890,000	$2,390,000
AG-1 (M8)	Agriculture and Open Space	Reduce GHGs from Agricultural Equipment	Reduce fossil fuel consumption in field equipment	$155,180,000	$204,750,000
AG-3 (M9)	Agriculture and Open Space	Increase Carbon Storage	Enhance carbon farming practices in the region	$82,210,000	$92,690,000

General Notes

- Measures are each estimated individually as standalone programs. There is potential for efficiency in bundling the Measures together.
- Estimates include new projected costs expected to be realized by Napa County. Funding from other sources required for successful program implementation is not included unless otherwise noted.

-The cost include here are not an offer for construction and/or project execution. The costs presented in this estimate are considered Class 4 with an accuracy range of -30% to +50% of the actual cost, according to the Recommended Practice No. 107R-19: Cost Estimate Classification System - As Applied in Engineering, Procurement, and Construction for the Environmental Remediation Industries (AACE International 2021). The cost estimate has been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project will depend on actual labor, material costs, and competitive variable factors. Because of this, project feasibility and funding needs must be carefully reviewed prior to making specific decisions to help ensure proper project evaluation and adequate funding.

To refine each of the cost estimates, the following could be done:

- Review and confirm the assumptions on labor costs, both the assumed rate and FTE.
- Periodic costs, such as a program updates occurring every 3 or 5 years, are annualized for estimate purposes. These costs can be allocated to specific years and discounted accordingly as more details of timing and precise implementation are defined.

For each of the cost estimates, the following assumptions are made:

- Labor costs include internal staff, not consultants unless otherwise noted.
- An annual discount rate of 2.2% is used for all estimates unless otherwise noted. This is the 20-year real interest rate on US treasury notes and bonds for the 2025 calendar year per OMB Circular No. A-94.

Estimate #: 1
Emissions Sector: Building Energy
Strategy: Energy Efficiency and Electrification
Measure: Develop a comprehensive energy retrofit program to transition existing residential and non-residential buildings to net zero carbon with a target of 25 percent of existing buildings by 2030 and 100 percent by 2045.

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Program Labor Cost Components

The inputs here will be the basis for the estimated cost of labor (administrative, engineering, planning, consultant, etc.) associated with setting up and running the program.

Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Set up Tasks	Duration, yr.	Timeline
Pre-electrification program development	*3*	*2026 - 2028*
Reach code development	*3*	*2026 - 2028*
Streamline permitting program	*1*	*2026*
Community outreach and education	*3*	*2026 - 2028*
Residential income limit study	*3*	*2026 - 2028*
Non-residential participation study	*3*	*2026 - 2028*

Ongoing Program Management Tasks	Duration, yr.	Timeline
Implementation management	*16*	*2029 - 2045*
Reach code updates (every 3 years)	*16*	*2029 - 2045*
Permitting and outreach updates (annually)	*16*	*2029 - 2045*
Income limit reviews (annually)	*16*	*2029 - 2045*
Income limit program major review and update (one time)	*1*	*2035*

Program Material Cost Components

The inputs here will inform the basis for the cost of variable components (program participation, construction projects, capital expenditures) dependent on program targets.

Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Goal	Target	Deadline
Transition all existing residential buildings to all-electric with a target of 25 percent of existing buildings by 2030 and 100 percent by 2045.	*Avg two rebate projects per home*	2045
Transition all existing nonresidential buildings to all-electric with a target of 25 percent of existing buildings by 2030 and 100 percent by 2045.	*Avg two rebate projects per building*	2045

Data Request Tab Instructions:

Input required	No input needed
Input optional (to override **preliminary** assumption)	Red text indicated change based on review in 9-2025.

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Measure			Assumptions					
#	Emissions Sector	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
1	Building Energy	Energy Efficiency and Electrification	Develop a comprehensive energy retrofit program to transition existing residential and non-residential buildings to net zero carbon with a target of 25 percent of existing buildings by 2030 and 100 percent by 2045.	*Building types included*	*residential and non-residential*	*text*	Client input	High	
				Number of residential homes in program area	*56,049*	*quant*	Census data	High	Not all homes/buildings will require participation in rebate program. This is accounted for by "Residential target" value below. This number has been updated based on Ascent 9-19-25
				Number of non-residential buildings in program area	*34,890*	*quant*	Census data	High	Not all buildings will require participation in rebate program. This is accounted for by "Non-residential target" value below. Value confirmed on 2-27-25.
				Residential target	*2.0*	*avg projects per building*	Client input	Moderate	Ground truth research: 2.7 natural gas appliances per home. See References tab for additional info
				Non-residential target	*2.0*	*avg projects per building*	Client input	Low	Preliminary research did not return a value for number of natural gas appliances per non-res building. Recommend confirming this value, as non-res. rebate costs are largest driver of total program cost.
				Residential adoption	*25%*	*of all homes at year 5*	Client input	High	
					50%	*at year 10*	Client input	High	
					75%	*at year 15*	Client input	High	
					100%	*at year 20*	Client input	High	
				Non-Residential adoption	*25%*	*of all buildings at year 5*	Client input	High	
					50%				Includes minor revisions to county ordinance plus coordination with individual jurisdictions to adopt their own ordinances based on the county's. The labor for initial adoption of a Building Energy Reach Code Ordinance was only 0.08 FTE, and that measure needs updated ordinances every three years. The County's Reusable Foodware and Waste Reduction Ordinance is already adopted, and the labor for other jurisdictions to adopt a similar ordinance is assumed to be low, per County guidance. The labor for ongoing enforcement was approved by the County. After Discussion on 4/2, leaving this at 0.5 FTE to account for coordination with jurisdictions adopting their own ordinances per County guidance.
						at year 10	Client input	High	
					75%				Assume funding source has limited reporting requirements - FTE not impacted by funding source. FTE will increase with increased reporting requirement (up to 10 hrs. / month). This is for the management of incentives for electric/solar equipment, which is assumed to be an expansion of the BAAQMD program. The LOE may vary greatly based on the extent of the expansion / level of implementation by the county.
						at year 15	Client input	High	
					100%	*at year 20*	Client input	High	
				Average residential rebate	*$2,000*	*USD*	Client Input	Moderate	Based on similar rebate programs initial rebate was defined at $1,500. Rebate values vary widely across all similar programs. Key driver in total cost estimate. Per comment from staff, value revised to be higher (maybe closer to $2000-$3000).
				Average non-residential rebate	*$3,500*	*USD*	Client Input	Low	Based on similar rebate programs original cost $3,000. Rebate values vary widely across all similar programs. Key driver in total cost estimate. Should be reviewed. Per comment from staff, value revised to be higher.
				Average residential permitting fee	*$290*	*USD*	Jacobs research	Moderate	Assumes permitting fee for "new or alteration to electrical" according to Napa County Example Fees for Common BES Projects
				Residential permitting fee reduction	*20%*	*of total fee*	Client input	Moderate	
				Average non-residential permitting fee	*$740*	*USD*	Jacobs research	Moderate	Assumes permitting fee for "new or alteration to electrical" according to Napa County Example Fees for Common BES Projects
				Non-Residential permitting fee reduction	*20%*	*of total fee*	Client input	Moderate	
				Pre-electrification program development labor	*1.0*	*FTEs over task duration*	Jacobs assumption	Low	
				Reach code development labor	*0.5*	*FTEs over task duration*	Jacobs assumption	Low	

Streamlined permitting program labor	*0.5*	*FTEs over task duration*	Jacobs assumption	Low	
Community outreach and education labor	*1.0*	*FTEs over task duration*	Jacobs assumption	Low	
Residential income limit study labor	*0.5*	*FTEs over task duration*	Jacobs assumption	Low	
Non-residential participation study labor	*0.5*	*FTEs over task duration*	Jacobs assumption	Low	
Implementation management labor	*1.2*	*FTEs over task duration*	Jacobs assumption	Low	
Reach code updates labor	*0.1*	*FTEs over task duration*	Jacobs assumption	Low	
Permitting and outreach updates labor	*0.1*	*FTEs over task duration*	Jacobs assumption	Low	
Income limit reviews labor	*0.3*	*FTEs over task duration*	Jacobs assumption	Low	
Income limit program major review and update labor	*0.5*	*FTEs over task duration*	Jacobs assumption	Low	
Average labor rate (all-in cost)	*140*	*USD/hr*	Jacobs assumption	Moderate	Assumes internal labor for all program development and management labor costs. Assumes no consultant or contractor labor costs.

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Estimate #: 1
Emissions Sector: Building Energy
Strategy: Energy Efficiency and Electrification
Measure: Develop a comprehensive energy retrofit program to transition existing residences and businesses to net zero carbon by 2045

**red text denotes cells with formulas that must be reviewed and potentially manually updated with any updates to Program Outline or Inputs Matrix tab inputs

Parameters and Assumptions

Demographic

Home types included:	residential and non-residential
Number of residential homes in program area	56,049
Number of non-residential buildings in program area	34,890
Avg number of natural gas appliances per residential home	2.00
Avg number of natural gas appliances per non-residential building	2.00

Adoption

Includes minor revisions to county ordinance plus coordination with individual jurisdictions to adopt their own ordinances based on the county's. The labor for initial adoption of a Building Energy Reach Code Ordinance was only 0.08 FTE, and that measure needs updated ordinances every three years. The County's Reusable Foodware and Waste Reduction

Assume funding source has limited reporting requirements - FTE not impacted by funding source. FTE will increase with increased reporting requirement (up to 10 hrs. / month). This is for the management of incentives for electric/solar equipment, which is assumed to be an expansion of the BAAQMD program. The LOE may vary greatly based on the extent of the expansion / level of implementation by the county.

Year 5		
Residential adoption	25%	of all homes in implementation area
Commercial adoption	25%	of all commercial buildings in implementation area
Year 10		
Residential adoption	50%	of all homes in implementation area
Commercial adoption	50%	of all commercial buildings in implementation area
Year 15		
Residential adoption	75%	of all homes in implementation area
Commercial adoption	75%	of all commercial buildings in implementation area
Year 20		
Residential adoption	100%	of all homes in implementation area
Commercial adoption	100%	of all commercial buildings in implementation area

Rebates

Average rebate	
Residential rebate per project	$2,000
Commercial rebate per project	$3,000

Reduced permitting fees

	Avg permitting fee	Fee reduction	Cost per permit to Jurisdictions
Residential	$290	20%	$58
Commercial	$740	20%	$148

Program Costs

	Years	FTEs	Duration (years)	Avg Labor Rate, $/hr	Cost
Pre-electrification program development labor	1 to 3	1.00	3	$140	$840,000
Reach code development labor	1 to 3	0.50	3	$140	$420,000
Streamlined permitting program labor	1 to 3	0.50	3	$140	$420,000
Community outreach and education labor	1 to 3	1.00	3	$140	$840,000
Residential income limit study labor	1 to 3	0.50	3	$140	$420,000
Non-residential participation study labor	1 to 3	0.50	3	$140	$420,000
Implementation management labor	4 to 20	1.20	17	$140	$5,712,000
Reach code updates labor	4 to 20	0.13	17	$140	$595,000
Permitting and outreach updates labor	4 to 20	0.13	17	$140	$595,000
Income limit reviews labor	4 to 20	0.25	17	$140	$1,190,000
Income limit program major review and update labor	10	0.50	1	$140	$140,000

Total Cost Calculation

	Cumulative Spent				
	Year 5	Year 10	Year 15	Year 20	**Total**
Total residential rebate cost	$56,049,000	$112,098,000	$168,147,000	$224,196,000	$224,196,000
Total commercial rebate cost	$52,335,000	$104,670,000	$157,005,000	$209,340,000	$209,340,000
Total permit fee reduction cost	$812,711	$1,625,421	$2,438,132	$3,250,842	$3,250,842
Total administrative labor costs	$4,312,000	$6,832,000	$9,212,000	$11,592,000	$11,592,000
Total cost (at today's value)	$113,508,711	$225,225,421	$336,802,132	$448,378,842	**$448,378,842**

	Annual Spent																				
Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Total residential rebate cost	$0	$11,209,800	$11,209,800	$11,209,800	$11,209,800	$11,209,800	$11,209,800	$11,209,800	$11,209,800	$11,209,800	$11,209,800	$11,209,800	$11,209,800	$11,209,800	$11,209,800	$11,209,800	$11,209,800	$11,209,800	$11,209,800	$11,209,800	$11,209,800
Total commercial rebate cost	$0	$10,467,000	$10,467,000	$10,467,000	$10,467,000	$10,467,000	$10,467,000	$10,467,000	$10,467,000	$10,467,000	$10,467,000	$10,467,000	$10,467,000	$10,467,000	$10,467,000	$10,467,000	$10,467,000	$10,467,000	$10,467,000	$10,467,000	$10,467,000
Total permit fee reduction cost	$0	$162,542	$162,542	$162,542	$162,542	$162,542	$162,542	$162,542	$162,542	$162,542	$162,542	$162,542	$162,542	$162,542	$162,542	$162,542	$162,542	$162,542	$162,542	$162,542	$162,542
Total administrative labor costs	$0	$862,400	$862,400	$862,400	$862,400	$862,400	$504,000	$504,000	$504,000	$504,000	$504,000	$476,000	$476,000	$476,000	$476,000	$476,000	$476,000	$476,000	$476,000	$476,000	$476,000
Total spent	$0	$22,701,742	$22,701,742	$22,701,742	$22,701,742	$22,701,742	$22,343,342	$22,343,342	$22,343,342	$22,343,342	$22,343,342	$22,315,342	$22,315,342	$22,315,342	$22,315,342	$22,315,342	$22,315,342	$22,315,342	$22,315,342	$22,315,342	$22,315,342
Real discount rate	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%
Discount Factor		0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.80	0.79	0.77	0.75	0.74	0.72	0.71	0.69	0.68	0.66	0.65
Annual net present value (annual)	$0	$22,213,055	$21,734,887	$21,267,013	$20,809,210	$20,361,263	$19,608,427	$19,186,328	$18,773,315	$18,369,193	$17,973,770	$17,564,820	$17,186,712	$16,816,744	$16,454,739	$16,100,528	$15,753,941	$15,414,815	$15,082,989	$14,758,307	$14,440,613
Total net present value	**$359,870,669**																				

Results Considerations

To refine this cost estimate the following could be done:
Review and confirm the number of rebates to be issued and the cost per rebate for the commercial rebate program. This is the largest driver of cost.
There is variability in the desired number of equipment between county provided data - review to determine if 2.0 or 2.7 rebate will be provided per building type.

Additional notes:

- Assumption: all new homes built after 2024 have electric equipment and will not need to utilize rebate program.

Estimate #2
Emissions Sector: Building Energy
Strategy: Zero Carbon Development
Measure: BE-5: Develop and adopt a Zero-Carbon Buildings Reach Code for New Construction

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Program Labor Cost Components

The inputs here will be the basis for the estimated cost of labor (administrative, engineering, planning, consultant, etc.) associated with setting up and running the program.
Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Setup Tasks	Measure-Action ID	Duration, yr.	Timeline
Develop and adopt regionally consistent energy efficiency and renewable energy reach building codes	BE-5a	2	2027 - 2028
Develop process to track climate and energy codes and bills	BE-5b	2	2027 - 2028
Develop a process for evaluating and updating low carbon building material requirements	BE-5c	2	2027 - 2028

Ongoing Program Management Tasks		Duration, yr.	Timeline
Implement and manage regional energy reach codes program	BE-5a	17	2029 - 2045
Reach code updates (every 3 years)	BE-5	17	2029 - 2045
Review progress of state codes and bills to inform regional reach code	BE-5b	17	2029 - 2045
Review regional standards for low carbon building material requirements	BE-5c	17	2029 - 2045

Program Material Cost Components

The inputs here will inform the basis for the cost of variable components (program participation, construction projects, capital expenditures) dependent on program targets.
Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Goal	Target	Deadline
NONE		

minor revisions to county ordinance plus coordination with individual jurisdictions to adopt their own ordinances based on the county's. The labor for initial adoption of a Building Energy Reach Code Ordinance was only 0.08 FTE, and that measure needs updated

Assume funding source has limited reporting requirements - FTE not impacted by funding source. FTE will increase with increased reporting requirement (up to 10 hrs. / month). This is for the management of incentives for electric/solar equipment, which is assumed to be an expansion of the BAAQMD program. The LOE may vary greatly based on the extent of the expansion / level of implementation by the county.

Data Request Tab Instructions:

Input required | No input needed

Input optional (to override **preliminary** assumption Client-provided value

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	Measure				Assumptions				
#	Emissions Sector	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
			Decarbonize New Buildings						*Client comment: "At this point in time reach codes are not complicated to write, adopt, and implement because so many CA jurisdictions are early adopters and do the heavy lifting...assume FTEs for entire measure over duration would not exceed 0.25" Client input on 1/16/25*
2	Building Energy	Zero Carbon Development		*Reach code development labor*	*0.08*	*FTEs over task duration*	Client input	Moderate	
				Labor to track progress of state codes and bills related to climate to inform initial Reach code development	*0.08*	*FTEs over task duration*	Client input	Moderate	Client input on 1/16/25
				Labor for initial development of low carbon building materials requirements for Reach code	*0.08*	*FTEs over task duration*	Client input	Moderate	Client input on 1/16/25
				Labor for Reach code implementation and ongoing program management	*0.06*	*FTEs over task duration*	Client input	Moderate	Client input on 1/16/25
				Labor for periodic Reach code updates	*0.06*	*FTEs over task duration*	Client input	Moderate	Client input on 1/16/25
				Labor for state codes/bills review to inform reach code updates	*0.06*	*FTEs over task duration*	Client input	Moderate	Client input on 1/16/25
				Labor for reviewing low carbon building materials requirements to inform Reach code updates	*0.06*	*FTEs over task duration*	Client input	Moderate	Assumes internal labor for all program development and management labor costs. Assumes no consultant or contractor labor costs.
				Average labor rate (all-in cost)	*140*	*USD/hr*	Jacobs assumption	Moderate	

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Estimate #: 2
Emissions Sector: Building Energy
Strategy: Zero Carbon Development
Measure: Develop and adopt a Zero-Carbon Buildings Reach Code for New Construction

**red text denotes cells with formulas that must be reviewed and potentially manually updated with any updates to Program Outline or Inputs Matrix tab inputs

Parameters and Assumptions

Program Costs

	Years	FTEs	Duration (years	Avg Labor Rate	Cost
Reach code development labor	2 to 3	0.08	2	$140	$46,667
Labor to track progress of state codes and bills related to climate to inform initial Reach code development	2 to 3	0.08	2	$140	$46,667
Labor for initial development of low carbon buidling materials requirements for Reach code	2 to 3	0.08	2	$140	$46,667
Labor for Reach code implementation and ongoing program management	4 to 20	0.06	17	$140	$297,500
Labor for periodic Reach code updates	4 to 20	0.06	17	$140	$297,500
Labor for state codes/bills review to inform reach code updates	4 to 20	0.06	17	$140	$297,500
Labor for reviewing low carbon building materials requirements to inform Reach code updates	4 to 20	0.06	17	$140	$297,500

Total Cost Calculation

	Cumulative Spent				
	Year 5	Year 10	Year 15	Year 20	**Total**
Total administrative labor costs	$280,000	$630,000	$980,000	$1,330,000	$1,330,000
Total cost (at today's value)	$280,000	$630,000	$980,000	$1,330,000	**$1,330,000**

	Annual Spent																				
Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Total administrative labor costs	$0	$56,000	$56,000	$56,000	$56,000	$56,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000
Total spent	$0	$56,000	$56,000	$56,000	$56,000	$56,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000	$70,000
Real discount rate	##########	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%
Discount Factor		0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.80	0.79	0.77	0.75	0.74	0.72	0.71	0.69	0.68	0.66	0.65
Annual net present value (annual)	$0	$54,795	$53,615	$52,461	$51,332	$50,227	$61,432	$60,109	$58,815	$57,549	$56,310	$55,098	$53,912	$52,752	$51,616	$50,505	$49,418	$48,354	$47,313	$46,295	$45,298
Total net present value	**$1,057,206**																				

Results Considerations

- Cost to implement is not included due to varying nature of codes

Additional notes:

Estimate #: 3
Emissions Sector: On-Road Transportation
Strategy: Low and Zero Emissions Vehicles
Measure: Increase access to Zero Emissions Vehicle (ZEV) Fueling Infrastructure

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Program Labor Cost Components

The inputs here will be the basis for the estimated cost of labor (administrative, engineering, planning, consultant, etc.) associated with setting up and running the program.

Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Set up Tasks	Measure-Action ID	Duration, yr.	Timeline
Study and stakeholder coordination (MTC) to identify location for med / heavy duty fleet	*TR-3-a*	*3*	*2026-2028*
Gap analysis of existing private parking infrastructure to achieve 10% EVSE and an additional 10% EV-ready	*TR-3-b*	*2*	*2026-2027*

Ongoing Program Management Tasks	Measure-Action ID	Duration, yr.	Timeline
Review and update targets and progress for EVSE in parking infrastructure	*TR-3*	*9, every 5 years*	*2027 - 2035*

Program Material Cost Components

The inputs here will inform the basis for the cost of variable components (program participation, construction projects, capital expenditures) dependent on program targets.

Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Goal	Measure-Action ID	Target	Deadline
NONE			

Data Request Tab Instructions:

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Input required	No input needed	Client-provided value
Input optional (to override **preliminary** assumption)		Updated by Jacobs based on industry best practices

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Measure				Assumptions				
#	Emissions Sector	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
3	On-Road Transport	Low and Zero Emissions Vehicles	Increase access to Zero Emissions Vehicle (ZEV) fueling infrastructure	*Labor to identify opportunities and locations for chargers for medium and heavy duty fleet*	*0.25*	*FTEs over task duration*	Client input	Moderate	Program includes county-wide fleet mix, not just county-owned vehicles. Assumes ability to leverage existing GIS info/staff to understand scale of program. From Deborah Elliot: 0.25 because most jurisdictions are getting technical assistance on this from MTC for municipal fleets. Confirmed with Jacobs team. Client input on 1/16/25
				Labor for gap analysis of existing private parking infrastructure	*0.20*	*FTEs over task duration*	Jacobs Industry Best Practice	Moderate	Assume electrical infrastructure info. is available through public utility and that the County already has a relationship with private parking owners and has access to electricity records. Outreach component includes education component but not infrastructure info. gathering. No material costs are included for outreach activities.
				Labor for periodic review and update of requirements	*0.05*	*FTEs over task duration*	Jacobs Industry Best Practice	Moderate	Ongoing updates are about 20% of initial evaluation. Reviewed with Jacobs team and consistent with industry best practices.
				Average labor rate (all-in cost)	*140*	*USD/hr*	Jacobs assumpti	Moderate	Assumes internal labor for all program development and management labor costs. Assumes no consultant or contractor labor costs.

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Estimate #: 3
Emissions Sector: On-Road Transportation
Strategy: Low and Zero Emissions Vehicles
Measure: Increase access to Zero Emissions Vehicle (ZEV) Fueling Infrastructure

**red text denotes cells with formulas that must be reviewed and potentially manually updated with any updates to Program Outline or Inputs Matrix tab inputs

Parameters and Assumptions

Program Costs

	Years	FTEs	Duration (yea	Avg Labor Rat	Cost
Labor to identify opportunities and locations for chargers for medi	1 to 3	0.25	2	$140	$140,000
Labor for gap analysis of existing private parking infrastructure	1 to 2	0.20	2	$140	$112,000
Labor for periodic review and update of requirements	2 to 10	0.05	9	$140	$126,000

Total Cost Calculation

	Cumulative Spent				
	Year 5	Year 10	Year 15	Year 20	**Total**
Total administrative labor costs	$308,000	$378,000	$378,000	$378,000	$378,000
Total cost (at today's value)	$308,000	$378,000	$378,000	$378,000	**$378,000**

Annual Spent

Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Total administrative labor costs	$0	$61,600	$61,600	$61,600	$61,600	$61,600	$14,000	$14,000	$14,000	$14,000	$14,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total spent	$0	$61,600	$61,600	$61,600	$61,600	$61,600	$14,000	$14,000	$14,000	$14,000	$14,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Real discount rate	##########	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%
Discount Factor		0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.80	0.79	0.77	0.75	0.74	0.72	0.71	0.69	0.68	0.66	0.65
Annual net present value (annual)	$0	$60,274	$58,976	$57,707	$56,465	$55,249	$12,286	$12,022	$11,763	$11,510	$11,262	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total net present value	**$347,515**																				

Results Considerations

- There is no cost to customer or cost for increased utilization of existing incentive program factored in these results

Additional notes:

Assumes this is for a county wide fleet mix and that there is existing background information available. For example existing studies or mapping tools that have been used to identify the starting and ending point of trips.
Assumes that the County already has some basis for a network that can be used for medium and heavy duty charging.
Measures is for a study only and does not include developing infrastructure.
The cost for external studies done by a consultant are not included.

Estimate #: 4
Emissions Sector: On-Road Transportation
Strategy: Transportation Demand Management (TDM)
Measure: Expand Individual Trip TDM Programs

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Program Labor Cost Components

The inputs here will be the basis for the estimated cost of labor (administrative, engineering, planning, consultant, etc.) associated with setting up and running the program.

Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Set up Tasks	Measure-Action ID	Duration, yr.	Timeline
Support NVTA to secure additional funding for existing incentives	*TR-11-a1*	*2*	*2028-2029*
Consider expansion of current TDM programs through outreach	*TR-11-a2*	*3*	*2028-2030*
Develop and adopt TDM ordinances in all jurisdictions by 2028	*TR-11-b1*	*3*	*2028-2030*
Define and develop annual reporting metrics program (e.g. participation, VMT reduction, mode shift, funding)	*TR-11-b1*	*3*	*2028-2030*
Feasibility analysis for mobility as a service (MAAS)	*TR-11-c1*	*3*	*2028-2030*
Identify polices and programs that would spur adoption of services	*TR-11-c1*	*2*	*2028-2030*

Ongoing Program Management Tasks		Duration, yr.	Timeline
Expand TDM program through ongoing outreach to employers and existing participants	*TR-11-a2*	*18*	*2028-2045*
Annual metrics reporting	*TR-11-b1*	*18*	*2028 - 2045*
Review, renew or amend agreements and partnerships	*TR-11-a2*	*18*	*2028 - 2045*
Ongoing evaluation and opportunity assessment ordinance and TDM program implementation	*TR-11-c1*	*18*	*2028 - 2045*

Program Material Cost Components

The inputs here will inform the basis for the cost of variable components (program participation, construction projects, capital expenditures) dependent on program targets.

Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Goal		Target	Deadline
NONE			

Data Request Tab Instructions:

Input required	No input needed	Client-provided value
Input optional (to override **preliminary** assumption)		Updated by Jacobs based on industry best practices

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Measure			Assumptions					
#	Emissions Sector	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
			Expand Individual Trip TDM Programs						Assumes support is limited to identification of relevant grant programs and support in preparation of applications along with existing NVTA staff. Assume that the primary grant application will either be through the state or other transportation agency and that the County staff is minimal / limited with primary to provide information to support Napa Valley Transit, i.e. they are not the primary grant application.
4	On-Road Transportation	Transportation Demand Management (TDM)		*Labor to support NVTA to secure additional funding*	*0.1*	*FTEs over task dur.*	Jacobs Industry Best Practice	Moderate	
				Labor to expand current TDM programs through outreach	*0.2*	*FTEs over task dur.*	Jacobs assumption	Moderate	Develop turnkey outreach program to increase use of existing TDM programs and incentives.
				Labor to develop and adopt TDM ordinances	*0.3*	*FTEs over task dur.*	Jacobs Industry Best Practice	Moderate	Reviewed with Jacobs team and consistent with industry best practices.
				Labor to develop annual reporting metrics process	*0.1*	*FTEs over task dur.*	Jacobs Industry Best Practice	Moderate	Reviewed with Jacobs team and consistent with industry best practices.
				Labor to manage MAAS feasibility study	*0.1*	*FTEs over task dur.*	Jacobs assumption	Moderate	County staff requirement to review and approve consultant study
				Labor to identify policies and programs to spur adoption of services	*0.1*	*FTEs over task dur.*	Jacobs assumption	Moderate	County staff requirement to review and approve consultant recommendations
				Labor for TDM program outreach	*0.1*	*FTEs over task dur.*	Jacobs assumption	Moderate	
				Labor for annual metrics reporting	*0.1*	*FTEs over task dur.*	Jacobs assumption	Moderate	
				Labor to manage partnership relationships	*0.2*	*FTEs over task dur.*	Jacobs Industry Best Practice	Moderate	This is more about bringing all the components together in one place i.e. an app. Assumes mostly private partners – on the order of three partners.
				Labor for ongoing program evaluation	*0.1*	*FTEs over task dur.*	Jacobs assumption	Moderate	Includes minor revisions to county ordinance plus coordination with individual jurisdictions to adopt their own ordinances based on the county's. The labor for initial adoption of a Building Energy Reach Code Ordinance was only 0.08 FTE, and that measure needs updated ordinances every three years. The County's Reusable Foodware and Waste Reduction Ordinance is already adopted, and the labor for other jurisdictions to adopt a similar ordinance is assumed to be low, per County guidance. The labor for ongoing enforcement was approved by the County. After Discussion on 4/2, leaving this at 0.5 FTE to account for coordination with jurisdictions adopting their own ordinances per County guidance.
				Average labor rate (all-in cost)	*140*	*USD/hr*	Jacobs assumption	Moderate	
									Assume funding source has limited reporting requirements - FTE not impacted by funding source. FTE will increase with increased reporting requirement (up to 10 hrs. / month). This is for the management of incentives for electric/solar equipment, which is *assumed to be an expansion of the BAAQMD program. The LOE may vary greatly based on the extent of the expansion / level of implementation by the county.*
				Material costs for outreach	*$ -*		Client input	Moderate	
				Consultant services for MAAS feasibility study and identification of relevant MAAS policies and programs to leverage	*$ 100,000*	*USD*	Jacobs Industry Best Practice	Moderate	Assumes outside consultant for a one time feasibility study and benchmarking of existing programs. This would include a policy audit of the current Napa County polices ex. Parking.

Estimate #: 4
Emissions Sector: On-Road Transportation
Strategy: Transportation Demand Management (TDM)
Measure: Expand Individual Trip TDM Programs

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**red text denotes cells with formulas that must be reviewed and potentially manually updated with any updates to Program Outline or Inputs Matrix tab inputs

Parameters and Assumptions

Program Costs

	Years	FTEs	Duration (years	Avg Labor Rate	Cost
Labor to support NVTA to secure additional funding	3 to 4	0.10	2	$140	$56,000
Labor to expand current TDM programs through outreach	3 to 5	0.15	3	$140	$126,000
Labor to develop and adopt TDM ordinances	3 to 5	0.25	3	$140	$210,000
Labor to develop annual reporting metrics process	3 to 5	0.10	3	$140	$84,000
Labor for MAAS feasibility study	3 to 5	0.10	3	$140	$84,000
Labor to identify policies and programs to spur adoption of services	3 to 4	0.10	2	$140	$56,000
Labor for TDM program outreach	3 to 20	0.10	18	$140	$504,000
Labor for annual metrics reporting	3 to 20	0.10	18	$140	$504,000
Labor to manage partnership relationships	3 to 20	0.20	18	$140	$1,008,000
Labor for ongoing program evaluation	3 to 20	0.10	18	$140	$504,000

Contract Fees & Material Costs

	Years	Cost
Consultant fee for MAAS feasibility study	3 to 5	$ 100,000
Material costs for outreach	3 to 20	$ -

Total Cost Calculation

	Cumulative Spent				
	Year 5	Year 10	Year 15	Year 20	**Total**
Total administrative labor costs	$1,136,000	$1,836,000	$2,536,000	$3,236,000	$3,236,000
Total contract fees & material costs	$100,000	$100,000	$100,000	$100,000	$100,000
Total cost (at today's value)	$1,236,000	$1,936,000	$2,636,000	$3,336,000	**$3,336,000**

Annual Spent

Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Total administrative labor costs	$0	$227,200	$227,200	$227,200	$227,200	$227,200	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000
Total contract fees & material costs	$0	$20,000	$20,000	$20,000	$20,000	$20,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total spent	$0	$247,200	$247,200	$247,200	$247,200	$247,200	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000
Real discount rate	############	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%
Discount Factor		0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.80	0.79	0.77	0.75	0.74	0.72	0.71	0.69	0.68	0.66	0.65
Annual net present value (annual)	$0	$241,879	$236,672	$231,577	$226,592	$221,714	$122,863	$120,219	$117,631	$115,099	$112,621	$110,197	$107,824	$105,503	$103,232	$101,010	$98,836	$96,708	$94,626	$92,589	$90,596
Total net present value	**$2,747,989**																				

Results Considerations

To refine this cost estimate the following could be done:
Review and confirm administrative labor requirements. This is the largest driver of cost.

Additional notes:

Notes:
- Consultant fees included as a lump sum where relevant (MAAS study).
- Assumes the county already has a developed outreach program campaign that can be built upon and ready to launch. Assumes that analytics are run on the current outreach programs and will require some modifications to meet annual reporting requirements but will not be developed from scratch.

Estimate #: 5
Emissions Sector: Off-Road Transportation
Strategy: Electrification and Clean Alternatives
Measure: Zero Carbon Construction Equipment - Community

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Program Labor Cost Components

The inputs here will be the basis for the estimated cost of labor (administrative, engineering, planning, consultant, etc.) associated with setting up and running the program.
Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Set up Tasks	Measure-Ac	Duration, yr.	Timeline
Develop brochure to advertise existing incentives	*OF-3a*	*1*	*2029*

Ongoing Program Management Tasks		Duration, yr.	Timeline
Periodic updates of incentives brochure	*OF-3a*	*every 3 years*	*2030 - 2045*

Program Material Cost Components

The inputs here will inform the basis for the cost of variable components (program participation, construction projects, capital expenditures) dependent on program targets.
Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Goal		Target	Deadline
Distribute brochures to provide information about available incentives for electric construction equipment to contractors at the building permit counter		*All contractors seeking a building permit should have access to updated literature*	2045

Data Request Tab Instructions:

Input required	No input needed	client-provided value
Input optional (to override **preliminary** assumptio		Updated by Jacobs based on industry best practices

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	Measure			Assumptions					
#	Emissions Sector	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
5	Off-Road Vehicles and Equipment	Electrification and Clean Alternatives	Zero Carbon Construction Equipment - Community	*FTE for developing electric construction equipment incentive brochure*	*0.1*	*FTEs over task duration*	Jacobs assumption	Low	
				FTE to periodically update brochures for currently available incentives	*0.03*	*FTEs over task duration*	Jacobs assumption	Low	0.1 FTE every 3 years
				Estimated cost/brochure	*0.71*	*USD/brochure*	Jacobs Industry Best Practice	Moderate	Fedex printing cost for color, trifold brochure, 500/order as of 2/19/25
				Target # brochures distributed / year	*500*	*quantity*	Jacobs Industry Best Practice	Moderate	331 single and multi-family building permits issued in Napa county in 2023 according to NAHB source: https://www.nahb.org/News%20and%20Economics/Housing%20Economics/State%20and%20Local%20Data/Building%20Permits%20by%20State%20and%20Metro%20Area
				Average labor rate (all-in cost)	*140*	*USD/hr*	Jacobs assumption	Moderate	Assumes internal labor for all program development and management labor costs. Assumes no consultant or contractor labor costs.

Estimate #: 5
Emissions Sector: Off-Road Transportation
Strategy: Electrification and Clean Alternatives
Measure: Zero Carbon Construction Equipment - Community

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**red text denotes cells with formulas that must be reviewed and potentially manually updated with any updates to Program Outline or Inputs Matrix tab inputs

Parameters and Assumptions

Program Costs

	Years	FTEs	Duration (ye:	Avg Labor Ra	Cost
Labor to develop incentive brochure	4	0.10	1	$140	$28,000
Labor to periodically update brochures for currently available incentives	5 to 20	0.03	16	$140	$149,333

Material Costs

Cost per brochure	$	0.71
Brochures printed per year		500

Total Cost Calculation

	Cumulative Spent				
	Year 5	Year 10	Year 15	Year 20	**Total**
Total administrative labor costs	$37,333	$84,000	$130,667	$177,333	$177,333
Total material costs	$355	$2,130	$3,905	$5,680	$5,680
Total cost (at today's value)	$37,688	$86,130	$134,572	$183,013	**$183,013**

	Annual Spent																				
Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Total administrative labor costs	$0	$7,467	$7,467	$7,467	$7,467	$7,467	$9,333	$9,333	$9,333	$9,333	$9,333	$9,333	$9,333	$9,333	$9,333	$9,333	$9,333	$9,333	$9,333	$9,333	$9,333
Total material costs	$0	$71	$71	$71	$71	$71	$355	$355	$355	$355	$355	$355	$355	$355	$355	$355	$355	$355	$355	$355	$355
Total spent	$0	$7,538	$7,538	$7,538	$7,538	$7,538	$9,688	$9,688	$9,688	$9,688	$9,688	$9,688	$9,688	$9,688	$9,688	$9,688	$9,688	$9,688	$9,688	$9,688	$9,688
Real discount rate	##########	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%
Discount Factor		0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.80	0.79	0.77	0.75	0.74	0.72	0.71	0.69	0.68	0.66	0.65
Annual net present value (annual)	$0	$7,375	$7,217	$7,061	$6,909	$6,761	$8,502	$8,319	$8,140	$7,965	$7,794	$7,626	$7,462	$7,301	$7,144	$6,990	$6,840	$6,692	$6,548	$6,407	$6,269
Total net present value	**$145,324**																				

Results Considerations

To refine this cost estimate the following could be done:
Review and confirm administrative labor requirements. This is the largest driver of cost.
Review the size of the outreach program to make sure aligns with anticipated population.

Additional notes:

- No incentive funding is included in this estimate. Brenda Hom: "The purpose of this measure is to have the county/cities require the use of zero carbon equipment and identify outside incentive sources (E.g., BAAQMD or the state). Like M4, it is not intended to be funded by the municipalities, but they could if they wanted to."
- Cost to customer would vary widely

Estimate #: 6
Emissions Sector: Solid Waste
Strategy: Zero Waste
Measure: Increase diversion of solid waste to achieve >80% diversion from landfills by 2035

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Program Labor Cost Components

The inputs here will be the basis for the estimated cost of labor (administrative, engineering, planning, consultant, etc.) associated with setting up and running the program.
Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Set up Tasks	Measure-Action ID	Duration, yr.	Timeline
~~*Setup to expand residential backyard composting program & advertise*~~ *(Although this is listed as a component, per County staff comments no expansion is included in the cost estimate. 4/2/2025)*	*SW-1-a1*	*1*	*2025*
Adopt and implement Reusable Food Ware and Waste Reduction Ordinance	*SW-1-a2*	*2*	*2025 - 2026*
Perform feasibility study to adopt similar ordinance in all regional cities	*SW-1-a3*	*2*	*2025 - 2026*
Implement mandatory commercial food waste diversion program for food facility health permit holders	*SW-1-c,d1/SW-1-a5*	*2*	*2025 - 2026*
Implement waste bin audit program	*SW-1-d2/SW-1-a6*	*2*	*2025-2026*

Ongoing Program Management Tasks		Duration, yr.	Timeline
Ongoing management of residential composting program expansion	*SW-1-a1*	*20 yrs*	*2027 - 2045*
Implementation and enforcement of Reusable Food Ware and Waste Reduction Ordinance	*SW-1-a2*	*19 yrs*	*2027 - 2045*
Ongoing SB 1383/Edible Food Recovery Program Implementation & Management	*SW-1-a4*	*20 yrs*	*2027 - 2045*
Ongoing evaluation of Mandatory Commercial Food Waste Diversion Program	*SW-1-a5*	*20 yrs*	*2027 - 2045*
Ongoing evaluation of Waste Bin Audits	*SW-1-a6*	*20 yrs*	2027 - 2045

Program Material Cost Components

The inputs here will inform the basis for the cost of variable components (program participation, construction projects, capital expenditures) dependent on program targets.
Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Goal		Target	Deadline
Composting program outreach - start kit, info pamphlet, composting bins		*0% expansion of existing program*	2045

Data Request Tab Instructions:

Input required	No input needed
Input optional (to override **prelimi**	client-provided value Updated by Jacobs based on industry best practices Updated per 3/12 staff comments and follow up discussion 4/2/25

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Measure				Assumptions				
#	Emissions Secto	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
6	Solid Waste	Zero Waste	Increase diversion of solid waste to achieve diversion of at least 80% of waste from landfills by 2035	~~*Existing enrolled households in backyard compost program*~~	90	*# households*	Client input	High	# of households enrolled number from a 2018 source, scaled by the population change between 2018 and 2024 Source found governments spent an average of $12 per ton of organic materials composted at home; used an average of 646 pounds per year for each household. *Jesse: This number is County and City combined*. Client input on 1/30/25
				~~*Existing annual material costs for backyard compost program*~~	5100	*USD/year*	Client input	High	
				~~*Existing labor for management of backyard compost program*~~	0.011	*FTE/year*	Client input	High	Based on job titles found under County of Los Angeles Public Works directory; Napa County directories are not working. *Jesse: This number is County and City combined*. Client input on 1/30/25
				% expansion target for backyard composting program	0%	*%*	Client input	High	We assume that funding for the existing residential compost program is outside scope and are only considering expansions to the program. Per client feedback, setting the expansion target to 0. This brings costs for labor and materials to support the residential compost program expansion to 0 in the cost estimate. Target can be adjusted to include associated costs in the estimate as needed. *Jesse: Both the City of Napa and the County have reduced the number of backyard composting workshops due to a decrease in participation over the years. A noted reason could be the increase, accessibility, and convenience of curbside cart composting. Their Worm Composting Workshops have become more popular than the traditional compost bin.* Client input on 1/30/25
				~~*Progress toward expansion target at year 5*~~	0%		Jacobs assumption	Low	The progress % are not applicable since there is no expected increase in program expansion.

Measure			Assumptions					
#	Emissions Secto	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
				~~*Progress toward expansion target at year 10*~~	0%		Jacobs assumption	Low	The progress % are not applicable since there is no expected increase in program expansion.
				~~*Progress toward expansion target at year 15*~~	0%		Jacobs assumption	Low	The progress % are not applicable since there is no expected increase in program expansion.
				~~*Progress toward expansion target at year 20*~~	0%		Jacobs assumption	Low	The progress % are not applicable since there is no expected increase in program expansion.
				~~*Labor to set up expansion of backyard compost program*~~	*0*	*FTEs over task duration*	Client input	High	Updated to zero since staff indicates no set up for compost program expansion is needed
				Labor for adopting Reusable Food Ware and Waste Reduction Ordinance	*0.5*	*FTEs over task duration*	Client Input	Moderate	Includes minor revisions to county ordinance plus coordination with individual jurisdictions to adopt their own ordinances based on the county's. The labor for initial adoption of a Building Energy Reach Code Ordinance was only 0.08 FTE, and that measure needs updated ordinances every three years. The County's Reusable Foodware and Waste Reduction Ordinance is already adopted, and the labor for other jurisdictions to adopt a similar ordinance is assumed to be low, per County guidance. The labor for ongoing enforcement was approved by the County. After Discussion on 4/2, leaving this at 0.5 FTE to account for coordination with jurisdictions adopting their own ordinances per County guidance.
				Labor for ongoing enforcement of Reusable Food Ware and Waste Reduction Ordinance	*0.5*	*FTEs over task duration*	Jacobs Industry Best Practice	Low	Assume funding source has limited reporting requirements - FTE not impacted by funding source. FTE will increase with increased reporting requirement (up to 10 hrs. / month). This is for the management of incentives for electric/solar equipment, which is assumed to be an expansion of the BAAQMD program. The LOE may vary greatly based on the extent of the expansion / level of implementation by the county.

Measure			Assumptions					
#	Emissions Secto	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
				Manage feasibility study to adopt Reusable Food Ware and Waste Reduction Ordinance in all cities	*0.25*	*FTEs over task duration*	Jacobs Industry Best Practice		One time fee. Reviewed with Jacobs team and consistent with industry best practices.
				Contracted feasibility study to adopt Reusable Food Ware and Waste Reduction Ordinance in all cities	*$ 50,000*	*USD*	Jacobs Industry Best Practice		Deborah: This is higher for the City of Napa. I can contact our solid waste team if needed, but we have multiple staff working on this issue. I think this can be increased to 1 FTE. Client input on 1/31/2025. Title changed to "Labor to expand commercial food waste diversion program"(It was noted that all jurisdictions should have a program in place already. Client Comment 4/2/2025. (D. Elliott))
				Labor to expand commercial food waste diversion program	*1.0*	*FTEs over task duration*	Client input	Moderate	
				Technician labor to implement waste bin audit program	*1.0*	*FTEs over task duration*	Jacobs assumption	Low	No material costs for audit program are included. Labor for technician to complete audits. All audits are completed manually by a field technician.
				Labor to manage and evaluate effectiveness of commercial food waste diversion program	*1.25*	*FTEs over task duration*	Jacobs Industry Best Practice	Low	Reviewed with Jacobs team and consistent with industry best practices. Labor for project management, reviewing audit reports, aggregate findings, annually review program effectiveness, and adjust metrics as needed
				Labor for SB1383/Edible Food Recovery Program Implementation and Management	*1.25*	*FTEs over task duration*	Client input	Moderate	Deborah: This Probably should be higher for City of Napa, 1 FTE. Client input on 1/16/25. Per comments received 3/12 and discussion 4/2, increasing to 1.25 FTE to account for required coordination with individual jurisdictions.
				Average labor rate (all-in cost)	*140*	*USD/hr*	Jacobs assumption	Moderate	Assumes internal labor for all program development and management labor costs. Assumes no consultant or contractor labor costs.

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Estimate #: 6
Emissions Sector: Solid Waste
Strategy: Zero Waste
Measure: Increase diversion of solid waste to achieve >80% diversion from landfills by 2035

**red text denotes cells with formulas that must be reviewed and potentially manually updated with any updates to Program Outline or Inputs Matrix tab inputs

Parameters and Assumptions

Demographic

Existing enrolled households in backyard compost progr	90		
Existing annual material costs for backyard compost pro	$	5,100	
Existing labor for management of backyard compost pro	0.011		FTE
% expansion target for backyard composting program	0%		
new households enrolled in program based on expansion	0		

Adoption

minor revisions to county ordinance plus coordination with individual jurisdictions to adopt their own ordinances based on the county's. The labor for initial adoption of a Building Energy Reach Code Ordinance was only 0.08 FTE, Assume funding source has limited reporting requirements - FTE not impacted by funding source. FTE will increase with increased reporting requirement (up to 10 hrs. / month). This is for the management of incentives for electric/solar equipment, which is assumed to be an expansion of the BAAQMD program. The LOE may vary greatly based on the extent of the expansion / level of implementation by the co

Year 5		
Residential compost program expansion	0%	of all homes in implementation area
Year 10		
Residential compost program expansion	0%	of all homes in implementation area
Year 15		
Residential compost program expansion	0%	of all homes in implementation area
Year 20		
Residential compost program expansion	0%	of all homes in implementation area

Material Costs

Material costs for compost program expansion	
Compost program costs/enrolled household/year	$56.67
Feasibility to adopt Reusable Food Ware and Waste Red	$50,000

Program Costs

	Years	FTEs	Duration (years)	Avg Labor Rate,	Cost
Labor to set up expansion of backyard compost program	0	0	1	$ 140	$0
Labor for adopting Reusable Food Ware and Waste Reduction Ordinance	0 to 1	0.50	2	$ 140	$280,000
Labor for ongoing enforcement of Reusable Food Ware and Waste Reduction Ordinance	2 to 20	0.50	19	$ 140	$2,660,000
Labor for managing feasibility study to adopt Reusable Food Ware and Waste Reduction Ordinance in all cities	0 to 1	0.25	2	$ 140	$140,000
Labor to develop commercial food waste diversion program	0 to 1	1.00	2	$ 140	$560,000
Technician labor to implement waste bin audit program	0 to 1	1.00	2	$ 140	$560,000
Labor to manage and evaluate effectiveness of commercial food waste diversion program	1 to 20	1.25	20	$ 140	$7,000,000
Labor for SB1383/Edible Food Recovery Program Implementation and Management	1 to 20	1.25	20	$ 140	$7,000,000
Additional labor for backyard compost program expansion	1 to 20	0.00	20	$ 140	$0

Total Cost Calculation

Cumulative Spent

	Year 5	Year 10	Year 15	Year 20	Total
Total material costs for residential compost program exp	$0	$0	$0	$0	$0
Total costs for contracted studies	$50,000	$50,000	$50,000	$50,000	$50,000
Total administrative labor costs	$5,600,000	$9,800,000	$14,000,000	$18,200,000	$18,200,000
Total cost (at today's value)	$5,650,000	$9,850,000	$14,050,000	$18,250,000	**$18,250,000**

Annual Spent

Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Total material costs	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total costs for contracted studies	$50,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total administrative labor costs	$933,333	$933,333	$933,333	$933,333	$933,333	$933,333	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000
Total spent	$941,667	$941,667	$941,667	$941,667	$941,667	$941,667	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000
Real discount rate	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%
Discount Factor	1.00	0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.80	0.79	0.77	0.75	0.74	0.72	0.71	0.69	0.68	0.66	0.65
Annual net present value (annual)	$941,667	$921,396	$901,562	$882,154	$863,165	$844,584	$737,181	$721,312	$705,785	$690,591	$675,726	$661,180	$646,947	$633,020	$619,394	$606,060	$593,014	$580,249	$567,758	$555,536	$543,577

Total net present value	$14,891,855

Results Considerations
To refine this cost estimate the following could be done: Review and confirm the expansion target for residential compost program. Review and confirm assumptions for administrative labor requirements. Ongoing labor requirements for the Commercial Food Waste Diversion Program and Edible Food Recovery Program are the largest drivers of cost.

Additional notes:

- 100% of contract study fees are all included in Year 0.
- Year 0-5 costs are spread evenly across Year 0-5 instead of 1-5 as with the other measures since this is the only measure with significant spending in Year 0
- Incentives to make organic waste pickup less expensive than standard landfill pickup are not included in program.
- Additional air space freed up in landfills may result in savings that offset some of the associated program costs. The changes in landfill infrastructure are not included in this measure or cost estimate.

unity.

Estimate #: 7
Emissions Sector: Water/Waste Water
Strategy: Waste Water Treatment
Measure: Reduce fugitive methane emissions from Wastewater Treatment Plants (WWTPs)

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Program Labor Cost Components

The inputs here will be the basis for the estimated cost of labor (administrative, engineering, planning, consultant, etc.) associated with setting up and running the program.

Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Set up Tasks	Measure-Action ID	Duration, yr.	Timeline
Develop evaluation program for options to reduce fugitive emissions for WWTPs without waste-to-energy systems	*WW-1*	*1*	*2032*

Ongoing Program Management Tasks		Duration, yr.	Timeline
Evaluate and periodically update program	*WW-1*	*14*	*2032 - 2045*
Program implementation/oversight/audit evaluations (Assumes audits are performed by existing onsite staff with analysis and follow up by the county/jurisdictions)	*WW-1*	*14*	*2032 - 2045*

Program Material Cost Components

The inputs here will inform the basis for the cost of variable components (program participation, construction projects, capital expenditures) dependent on program targets.

Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Goal	Target	Deadline

NONE			

Data Request Tab Instructions:

Input required	No input needed
Input optional (to override **preliminary** assu	Updated by Jacobs based on industry best practices Updated per 3/12 staff comments and follow up discussion 4/2/25
client-provided value	

Jacobs

	Measure			Assumptions					
#	Emissions Sector	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
7	Water/Wastewater	Waste Water Treatment	Reduce fugitive methane emissions from Wastewater Treatment Plants (WWTPs)	*Waste water treatment plants without waste-to-energy*	*6.00*	*quantity*	Client input	Low	Assumption: 2 Napa County facilities (NBRID and LBRID) plus 4 smaller jurisdictions/private WWTP included in program. 5 active NPDES permits per the state water resource control board. *Jesse: Napa County's 2 facilities (NBRID and LBRID) are not equipped with waste-to-energy. There are challenges in the engineering economics for methane gas recovery for a facility of this size according to District Engineer of Water Resources. It is likely that the smaller jurisdictions face similar challenges with bringing waste-to-energy to their wastewater treatment plants.* Client input on 1/30/25
				Labor to evaluate audits and administer program	*0.25*	*FTEs over task duration*	Client input	Moderate	Labor to manage, evaluate, and administer audit program. Assumes contracted baseline assessment plus facility-administered updates every 3 years, with oversight and evaluation by the county/jurisdictions. If 6 plants are included in program, 2 audits would be completed per year. LOE reduced per County comment for assuming existing onsite staff will implement this program. 4-2-2025.
				Labor for program monitoring and updates	*0.10*	*FTEs over task duration*	Jacobs Industry Best Practice	Moderate	Project manager to oversee, report on, and update program as needed

Measure			Assumptions					
#	Emissions Sector	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
				Labor for program setup	*1.50*	*FTEs over task duration*	Jacobs Industry Best Practice	Moderate	Assumes a project manager and full time assistant. Program setup includes development of standard tools & templates (e.g. leak detection work practice forms) to implement industry best practices, especially for smaller facilities. Labor for program set-up was not reduced but labor to do ongoing evaluations were per client comment 4/2/2025. If existing audit programs are already established this set-up program may be reduced as appropriate based on current level of existing program.
				Target percent of applicable plants to audit per year	*33%*		Jacobs assumption	Moderate	Measure description specifies audits every 3 years. Assume audits are staggered so a fixed number are completed per year.
				Contract fee for initial baseline audits	*########*	*USD/audit*	Jacobs Industry Best Practice	Moderate	Assumes a contracted baseline evaluation for each plant is included as a lump sum fee. Internal resources are assumed to manage periodic (every 3 yr) updates to the baseline evaluations.
				Average labor rate (all-in cost)	*140*	*USD/hr*	Jacobs assumption	Moderate	Assumes internal labor for all program development and management labor costs. Assumes no consultant or contractor labor costs.

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Estimate #: 7
Emissions Sector: Water/Waste Water
Strategy: Waste Water Treatment
Measure: Reduce fugitive methane emissions from Wastewater Treatment Plants (WWTPs)

**red text denotes cells with formulas that must be reviewed and potentially manually updated with any updates to Program Outline or Inputs Matrix tab inputs

Parameters and Assumptions

Demographic

Waste water treatment plants withou	6.00
% plants audited per year	33%

Material Costs & Contract Fees

Average contract Fee for baseline as	$100,000

minor revisions to county ordinance plus coordination with individual jurisdictions to adopt their own ordinances based on the county's. The labor for initial adoption of a Building Energy Reach Code Ordinance was only 0.08 FTE, and that measure

Assume funding source has limited reporting requirements - FTE not impacted by funding source. FTE will increase with increased reporting requirement (up to 10 hrs. / month). This is for the management of incentives for electric/solar equipment, which is assumed to be an expansion of the BAAQMD program. The LOE may vary greatly based on the extent of the expansion / level of implementation by the count

Program Costs

	Years	FTEs	Duration (year	Avg Labor Rate	Cost
Labor to evaluate audits and adminis	7 to 20	0.25	14	$140	$980,000
Labor for program monitoring and up	7 to 20	0.10	14	$140	$392,000
Labor for program setup	7	1.50	1	$140	$420,000

Total Cost Calculation

	Cumulative Spent				
	Year 5	Year 10	Year 15	Year 20	Total
Total administrative labor costs	$0	$812,000	$1,302,000	$1,792,000	$1,792,000
Total material costs & contract fees	$0	$600,000	$600,000	$600,000	$600,000
Total cost (at today's value)	$0	$1,412,000	$1,902,000	$2,392,000	**$2,392,000**

Annual Spent

Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Total administrative labor costs	############	$0	$0	$0	$0	$0	$162,400	$162,400	$162,400	$162,400	$162,400	$98,000	$98,000	$98,000	$98,000	$98,000	$98,000	$98,000	$98,000	$98,000	$98,000
Total material costs & contract fees	############	$0	$0	$0	$0	$0	$120,000	$120,000	$120,000	$120,000	$120,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total spent	############	$0	$0	$0	$0	$0	$282,400	$282,400	$282,400	$282,400	$282,400	$98,000	$98,000	$98,000	$98,000	$98,000	$98,000	$98,000	$98,000	$98,000	$98,000
Real discount rate	############	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%
Discount Factor		0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.80	0.79	0.77	0.75	0.74	0.72	0.71	0.69	0.68	0.66	0.65
Annual net present value (annual)	############	$0	$0	$0	$0	$0	$247,833	$242,498	$237,278	$232,170	$227,172	$77,138	$75,477	$73,852	$72,263	$70,707	$69,185	$67,696	$66,238	$64,813	$63,417
Total net present value	**$1,887,738**																				

Results Considerations

To refine this cost estimate the following could be done:
- Review and confirm the number of plants without waste-to-energy and annual audits target.
- Review and confirm administrative labor requirements. These are the largest driver of cost. Current costs assume that audit will be done by facility staff and reviewed by County. The additional costs to the facility are not included per discussion on 4/2/2025. New program set up costs are included.

Additional notes:

- Program includes all public and private WWTP without waste-to-energy systems in County
- Assumes that initial baseline assessments are contracted studies (lump sum fee basis) but county personnel/WWTP personnel perform the periodic updates (FTE basis).
- Implementation of recommended actions from plant evaluations are not included in the estimate.
- Assumes that an optimization program, energy use / time of use would not be used to auto collect the data within the next 10 years.
- Assumes that smaller plants audits would be established as a base case to simplify the process. Rather than a full audit they would be set up as a standard work practices (example leak detection work practice forms) and compared year over year. Forms would be tied to a use of gas and standard inputs based on their configuration. The template could state performance metrics based on best practices to enable year over year comparisons
- Labor assumes this is a new program and staff to complete these efforts are not already included in County Plans.

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Estimate #: 8
Emissions Sector: Agriculture and Open Space
Strategy: Reduce GHGs from Agricultural Equipment
Measure: Reduce fossil fuel consumption in field equipment

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Program Labor Cost Components

The inputs here will be the basis for the estimated cost of labor (administrative, engineering, planning, consultant, etc.) associated with setting up and running the program.

Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Set up Tasks	Measure-Action ID	Duration, yr.	Timeline
Evaluate existing BAAQMD incentive programs for electric agriculture equipment/retiring fossil fuel equipment	*AG-1-a1*	*4*	*2027-2030*
Website updates to advertise available incentives	*AG-1-a3*	*2*	*2027-2028*
Develop irrigation pump replacement program	*AG-1-b1*	*3*	*2027-2029*

Ongoing Program Management Tasks		Duration, yr.	Timeline
Community outreach to encourage retirement of fossil fuel equipment	*AG-1-a2*	*16 yrs*	*2027 - 2045*
Periodic website updates for up-to-date incentive info	*AG-1-a3*	*0.1, annually*	*2028 - 2045*
Irrigation pump replacement program implementation and management	*AG-1-b1*	*16 yrs*	*2029 - 2045*
Program management of incentives for electric/solar equipment	*AG-1-b2*	*16 yrs*	*2030 - 2045*

Program Material Cost Components

The inputs here will inform the basis for the cost of variable components (program participation, construction projects, capital expenditures) dependent on program targets.

Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Goal		Target	Deadline
Electric equipment incentives for 100% transition of eligible agriculture equipment	*AG-1-a1*	*100% eligible equipment replaced*	2045
Community outreach for encouragement of fossil fuels (brochures, advertising)	*AG-1-a2*	*100% of agricultural community reached*	2045
Incentives for irrigation pump replacement up to 100% transition (electric pump replacement rebate/voucher)	*AG-1-b1*	*50% of fossil fuel pumps replaced*	2045
Incentives for biofuel irrigation pumps to 100% transition (biofuel purchase rebate/voucher)	AG-1-b2	*50% fossil fuel pumps replaced*	2045

Data Request Tab Instructions:

Input required	No input needed		Updated per 3/12 staff comments and follow up discussion 4/2/25
		Updated by Jacobs based on industry best practices	
Input optional (to override **preliminary** as			client-provided value

Jacobs

	Measure			Assumptions					
#	Emissions Sector	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
			Reduce fossil fuel consumption in field equipment						Standard NRCS list or vineyard specific definition of equipment types. Assumption that this is per individual incentive and that this program includes the replacement of tractors and UTVs.
8	Agriculture and Ope	Reduce GHGs from A		Cost per incentive - agriculture equipment	$75,000	USD	Client input	High	
				~~Additional qualifying incentives - agriculture equipment~~	~~-~~	~~quantity~~	~~Client input~~		~~Undefined at this point. Not included in estimate. Client marked unknown on 1/31/25~~
									Assumes Tier 0, Tier 1, Tier 2 tractors must be scrapped; farms less than 100 acres will be considered "small farmers" and thus eligible for pre-owned equipment; Tier 0 and Tier 1 tractors may be replaced with certified pre-owned Tier 3 or cleaner equipment. The amount of incentive provided is variable and should be updated based on availability of funding sources.
				Cost support for tractor equipment	90%	% of eligible co	Jacobs Industry Best Practice		
									Diesel or gasoline UTVs can be replaced with electric models. The amount of incentive provided is variable and should be updated based on availability of funding sources.
				Cost support for UTV equipment	75%	% of eligible co	Jacobs Industry Best Practice		

	Measure			Assumptions					
#	Emissions Sector	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
									This cost includes estimated costs per year for the pump and everything associated to make a solar pump function in the service: emitter package, solar package. This number has been updated to be based on the NAPA Irrigation System Overview, where irrigation accounts for 70% of farm electricity use. Variable frequency drives (VFDs) – most vineyards use well pumps, (vertical turbine or submersible pumps) to get water out of the ground, with booster pumps (for pressure) to irrigate from groundwater.
				Cost per incentive - electric/solar/biofuel irrigation pumps	$75,000	USD	Client input	High	
				~~Qualifying incentives - electric/solar irrigation pumps~~	~~unknown~~	~~quantity~~	~~Client input~~		~~Assume eligible incentives per grower per farm will be limited to $75,000 per rational above. Client marked unknown on 1/31/25. In terms of the mechanism that will be used to retire fossil fuel ag equipment: Brenda Hom on 10/23/24 "This hasn't been planned yet. It will depend on what funding the county can find/obtain. E.g., BAAQMD program may be a trade in one. Feel free to do additional research on this."~~
				~~Qualifying incentives - biofuel irrigation pumps~~	~~unknown~~	~~quantity~~	~~Client input~~		~~assume eligible incentives per grower per farm will be limited to $75,000. Client marked unknown on 1/31/25~~

	Measure			Assumptions					
#	Emissions Sector	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
									Assumes this covers the new pump; Tier 3 pumps are eligible to be replaced; replacement engines must be emission certified to a Tier 4 level, new, certified, off-road engine; projects will be funded based on a dollar per gross/brake horsepower basis, based on the horsepower of new replacement diesel engine not to exceed 90% eligible costs. The dollar per horsepower payment will be $120/HP less than 125 HP and $100/HP for 125HP or more. The amount of incentive provided is variable and should be updated based on availability of funding sources.
				Cost support for pump conversion from diesel/natural gas to electric/biofuel	90%	% of eligible co	Jacobs Industry Best Practice		

	Measure			Assumptions					
#	Emissions Sector	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
									For irrigation conversion to solar, the incentive will cover the additional equipment, in addition to the pump, required to convert a system to solar. A solar irrigation system will include solar panels, inverter, pump, controller, batteries, sensors, piping, and emitters; Solar panels cost $3k-$15k, accessories (batteries, inverter, etc.) cost $1-5k, installation costs $1-10k. Because this is a new management technique, it is assumed that the incentive will take into account the use of additional management systems/planning; Cost of drilling a commercial well ($50-10/ft) is not included in this program. The amount of incentive provided is variable and should be updated based on availability of funding sources.
				Cost support for pump conversion from diesel/natural gas to solar	90%	% of eligible co	Jacobs Industry Best Practice	High	
				Number of county farms less than 180 acres	1,545	quantity	Jacobs research	High	Primary target of incentive programs are for farms less than 180 acres; 87% of total farms

	Measure			Assumptions					
#	Emissions Sector	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
									Includes minor revisions to county ordinance plus coordination with individual jurisdictions to adopt their own ordinances based on the county's. The labor for initial adoption of a Building Energy Reach Code Ordinance was only 0.08 FTE, and that measure needs updated ordinances every three years. The County's Reusable Foodware and Waste Reduction Ordinance is already adopted, and the labor for other jurisdictions to adopt a similar ordinance is assumed to be low, per County guidance. The labor for ongoing enforcement was approved by the County. After Discussion on 4/2, leaving this at 0.5 FTE to account for coordination with jurisdictions adopting their own ordinances per County guidance.
				Number of county farms	1,772	quantity	Jacobs research	High	
				Management of incentive program - agriculture equipment	0.50	FTEs over task	Jacobs assumption	Low	Assume funding source has limited reporting requirements - FTE not impacted by funding source. FTE will increase with increased reporting requirement (up to 10 hrs. / month). This is for the management of incentives for electric/solar equipment, which is assumed to be an expansion of the BAAQMD program. The LOE may vary greatly based on the extent of the expansion / level of implementation by the county.

	Measure			Assumptions					
#	Emissions Sector	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
									Reviewed with Jacobs team and consistent with industry best practices.
				Management of incentive pr	0.50	FTEs over task	Jacobs Industry Best Practice	Low	
				Periodic website updates	0.10	FTEs over task	Jacobs Industry Best Practice	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Community outreach mater	$ 5,000	USD	Client input	High	Client input on 1/31/25
				Community education and c	0.25	FTEs over task	Jacobs Industry Best Practice	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Evaluate existing BAAQMD i	0.05	FTEs over task	Jacobs Industry Best Practice	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Website setup to advertise available incentives	0.10	FTEs over task duration	Jacobs Industry Best Practice	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Develop irrigation pump replacement program incentive program	0.25	FTEs over task duration	Jacobs assumption	Low	Assumes program structure can be leveraged from existing lawn and garden trade-in program. Assumes a direct-to-farmer incentive - equipment dealers not involved.
				adoption at year 5 for ag equipment	5%	%	Jacobs Industry Best Practice	Low	Reviewed with Jacobs team and consistent with industry best practices.
				adoption at year 10 for ag equipment	33%	%	Jacobs Industry Best Practice	Low	Reviewed with Jacobs team and consistent with industry best practices.
				adoption at year 15 for ag equipment	67%	%	Jacobs Industry Best Practice	Low	Reviewed with Jacobs team and consistent with industry best practices.
				adoption at year 20 for ag equipment	99%	%	Jacobs Industry Best Practice	Low	Reviewed with Jacobs team and consistent with industry best practices.

	Measure			Assumptions					
#	Emissions Sector	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
				incentive program adoption at year 5 for pumps	3%	%	Jacobs Industry Best Practice	Low	Reviewed with Jacobs team and consistent with industry best practices.
				incentive program adoption at year 10 for pumps	10%	%	Jacobs Industry Best Practice	Low	Reviewed with Jacobs team and consistent with industry best practices.
				incentive program adoption at year 15 for pumps	30%	%	Jacobs Industry Best Practice	Low	Reviewed with Jacobs team and consistent with industry best practices.
				incentive program adoption at year 20 for pumps	50%	%	Jacobs Industry Best Practice	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Average labor rate (all-in cost)	140	USD/hr	Jacobs assumption	Moderate	Assumes internal labor for all program development and management labor costs. Assumes no consultant or contractor labor costs.

Estimate #: 8
Emissions Sector: Agriculture and Open Space
Strategy: Reduce GHGs from Agricultural Equipment
Measure: Reduce fossil fuel consumption in field equipment

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**red text denotes cells with formulas that must be reviewed and potentially manually updated with any updates to Program Outline or Inputs Matrix tab inputs

Parameters and Assumptions

Demographic

Total number of farms in the county	1772
Number of farms less than 180 acres	1545

Adoption

Year 5		
Land owner adoption of ag equipment	5%	of all landowners in implementation area
Land owner adoption of pumps conversion	3%	of all landowners in implementation area
Year 10		
Land owner adoption of ag equipment	33%	of all landowners in implementation area
Land owner adoption of pumps conversion	10%	of all landowners in implementation area
Year 15		
Land owner adoption of ag equipment	67%	of all landowners in implementation area
Land owner adoption of pumps conversion	30%	of all landowners in implementation area
Year 20		
Land owner adoption of ag equipment	99%	of all landowners in implementation area
Land owner adoption of pumps conversion	50%	of all landowners in implementation area

Incentives & Material Costs

Average Grant Award	
Cost per incentive - agriculture equipment	$75,000
Cost per incentive - electric/solar/biofuel irrigation pumps	$75,000
Material Costs	
Community outreach annual material costs	$5,000

Program Costs

	Years	FTEs	Duration (years)	Avg Labor Rate, $/hr	Cost
Management of incentive program - agriculture equipment	5 to 20	0.50	16	$140	$2,240,000
Management of incentive program - irrigations pumps	5 to 20	0.50	16	$140	$2,240,000
Periodic website updates	3 to 20	0.10	18	$140	$504,000
Community education and outreach	2 to 20	0.25	19	$140	$1,330,000
Evaluate existing BAAQMD incentive programs	2 to 5	0.05	4	$140	$56,000
Website setup to advertise available incentives	2 to 3	0.10	2	$140	$56,000
Develop irrigation pump replacement program	2 to 4	0.25	3	$140	$210,000

Includes minor revisions to county ordinance plus coordination with individual jurisdictions to adopt their own ordinances based on the county's. The labor for initial adoption of a Building Energy Reach Code Ordinance was only 0.08 FTE, and that measure needs updated ordinances every three years. The County's Reusable Foodware and Waste Reduction Assume funding source has limited reporting requirements - FTE not impacted by funding source. FTE will increase with increased reporting requirement (up to 10 hrs. / month). This is for the management of incentives for electric/solar equ

Total Cost Calculation

	Cumulative Spent				
	Year 5	Year 10	Year 15	Year 20	**Total**
Total Agricultural Equipment Incentive Costs	$6,645,000	$43,857,000	$89,043,000	$131,571,000	$131,571,000
Total Electric/Solar/Biofuel Irrigation Pumps Incentive Costs	$3,987,000	$13,290,000	$39,870,000	$66,450,000	$66,450,000
Total Community Outreach Materials Costs	$20,000	$45,000	$70,000	$95,000	$95,000
Total Administrative Labor Costs	$966,000	$2,856,000	$4,746,000	$6,636,000	$6,636,000
Total cost (at today's value)	$11,618,000	$60,048,000	$133,729,000	$204,752,000	**$204,752,000**

Annual Spent																				
Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Total Agricultural Equipment Incentive Costs	$0	$1,329,000	$1,329,000	$1,329,000	$1,329,000	$1,329,000	$7,442,400	$7,442,400	$7,442,400	$7,442,400	$7,442,400	$9,037,200	$9,037,200	$9,037,200	$9,037,200	$9,037,200	$8,505,600	$8,505,600	$8,505,600	$8,505,600	$8,505,600
Total Electric/Solar Irrigation Pumps Incentive Costs	$0	$797,400	$797,400	$797,400	$797,400	$797,400	$1,860,600	$1,860,600	$1,860,600	$1,860,600	$1,860,600	$5,316,000	$5,316,000	$5,316,000	$5,316,000	$5,316,000	$5,316,000	$5,316,000	$5,316,000	$5,316,000	$5,316,000
Total Community Outreach Materials Costs	$0	$4,000	$4,000	$4,000	$4,000	$4,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000
Total Administrative Labor Costs	$0	$193,200	$193,200	$193,200	$193,200	$193,200	$378,000	$378,000	$378,000	$378,000	$378,000	$378,000	$378,000	$378,000	$378,000	$378,000	$378,000	$378,000	$378,000	$378,000	$378,000
Total spent	$0	$2,323,600	$2,323,600	$2,323,600	$2,323,600	$2,323,600	$9,686,000	$9,686,000	$9,686,000	$9,686,000	$9,686,000	$14,736,200	$14,736,200	$14,736,200	$14,736,200	$14,736,200	$14,204,600	$14,204,600	$14,204,600	$14,204,600	$14,204,600
Real discount rate	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%
Discount Factor		0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.80	0.79	0.77	0.75	0.74	0.72	0.71	0.69	0.68	0.66	0.65
Annual net present value (annual)	$0	$2,273,581	$2,224,639	$2,176,751	$2,129,893	$2,084,044	$8,500,395	$8,317,412	$8,138,368	$7,963,178	$7,791,759	$11,599,136	$11,349,448	$11,105,135	$10,866,082	$10,632,174	$10,028,008	$9,812,141	$9,600,921	$9,394,247	$9,192,023
Total net present value	**$155,179,334**																				

Results Considerations

To refine this cost estimate the following could be done:
- Review and confirm assumptions related to agricultural equipment and irrigation pump incentives. These are the largest driver of cost and at the discretion of how much existing funding is available or additional funding can be provided by the County. This includes specifically the % per incentive the County is willing to provide under this program.
- Review and confirm administrative labor requirements.

Additional notes:

- The solar and biofuel irrigation pump replacement incentive is a single program; farmers that take advantage of the solar incentive cannot qualify for a separate biofuel incentive.
- Labor and incentive costs realized by the county/jurisdictions will likely be only some fraction of the total if funding is primarily through the existing BAAQMD program or other external funding source.

Estimate #: 9
Emissions Sector: Agriculture and Open Space
Strategy: Increase Carbon Storage
Measure: Enhance carbon farming practices in the region

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Program Labor Cost Components

The inputs here will be the basis for the estimated cost of labor (administrative, engineering, planning, consultant, etc.) associated with setting up and running the program.

Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Set up Tasks	Measure-Action ID	Duration, yr.	Timeline
Establish university and community partnerships	*AG-3-a 1*	*2*	*2026 - 2027*
develop webpage on RCAAP website	*AG-3*	*1*	*2026*
develop other educational resources	*AG-3-a2*	*1*	*2026*
categorize carbon capture potential of conservation easements for natural areas associated with agricultural lands	*AG-3-a2*	*2*	*2026 - 2027*
develop grant program to support local CFP partners	*AG-3-a3*	*2*	*2026 - 2027*
develop annual workshop program	*AG-3-a2*	*3*	*2026-2028*
Develop technical assistance guidelines	*AG-3-a3*	*3*	*2026-2028*
Collaborate with Napa RCD to develop CFP for all agricultural land categories	*AG-3-a3*	*3*	2026-2028

Ongoing Program Management Tasks		Duration, yr.	Timeline
periodic webpage/resource update	*AG-3-a2*	*0.1 annually, 10*	*2026 - 2035*
implementation/management of grant program for local CFP partners	*AG-3-a3*	*8*	*2028 - 2035*
Provide grant application assistance to income-qualified farmers/ranchers	*AG-3-a3*	*8*	*2028 - 2035*
Provide grant application assistance for applicants that commit to annual reporting	*AG-3-a3*	*8*	*2028 - 2035*
implementation and management of workshop program	*AG-3-a2*	*8*	*2028 - 2035*
periodic review and update of incentives and grants, analyze and disseminate annual reporting data from CFP grant program partic.	*AG-3-a3*	*8*	*2026-2035*
Support local supply chain for plant stock and composting	*AG-3-a4*	*8*	2026-2035

Program Material Cost Components

The inputs here will inform the basis for the cost of variable components (program participation, construction projects, capital expenditures) dependent on program targets.

Instructions: List the program components and corresponding information to be included in this measures cost estimation. Preliminary items have been provided based on measure text, but need confirmation from Ascent.

Program Goal		Target	Deadline
Grants to support local CFP partners	*AG-3-a3*	*75% of farmers qualify*	2035
material costs for supply chain on-farm composting program	*AG-3-a4*	*50% of farmers qualify*	2035
material costs for supply chain plant stock composting program	*AG-3-a4*	*3% of farmers qualify*	2035

Data Request Tab Instructions:

Input required	No input needed		client-provided value
Input optional (to override **preliminary** assu		Updated by Jacobs based on industry best practices	client-provided value superseded with more specific information.
			Updated per 3/12 staff comments and follow up discussion 4/2/25

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	Measure			Assumptions					
#	Emissions Sector	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
9	Agriculture and Open Space	Increase Carbon Storage	Enhance carbon farming practices in the region	*Average CFP grant award*	*$10,000*	*USD*	Client input	Moderate	Jesse: To deliver complete Carbon Farming Plan. Based on conversations with RCD. Client input on 1/31/25
				Qualifying CFP grants/year	*20*	*quantity*	Client input	Moderate	Client input on 1/31/25
				~~*Support for local supply chain develo*~~	~~*$1,000*~~	~~*USD/acre*~~	~~Client input~~	~~Moderate~~	Client input: $500-1000/acre. Using high end of range as a conservative estimate. Funding directly to farmer to implement CFD. Client input on 1/31/25. Number not used, due to more specific values provided after county input.
				Support for onsite compost local sup	*$270*	*USD/CY*	Jacobs Industry Best Practice	Moderate	NRCS conservation payments for CSP 336 Soild Carbon Amendment reimbursed CA farmers up to this amount for compost produced onsite
				Support for offsite compost local sup	*$1,698*	*USD/CY*	Jacobs Industry Best Practice	Moderate	NRCS conservation payments for CSP 336 Soil Carbon Amendment reimbursed CA farmers up to $270.21/CY up to this amount for compost procured from off-site
				Average compost application rate	*4.5*	*tons/acre*	Jacobs research	High	https://agroecology.berkeley.edu/resources/compost-bene https://www.peachcountrytractor.com/pages/mulch-calculator#:~:text=Length%20x%20Width%20=%20Square%20Feet,yd).
				Conversion of cubic yards per ton	*1.4*	*CY/ton*	Jacobs research	High	
				Assumed Average Onsite Compost U	*90%*	*%*	Jacobs assumption	Low	
				Assumed Average Offsite Compose U	*10%*	*%*	Jacobs assumption	Low	

Measure			Assumptions					
#	Emissions Sector	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
									Includes minor revisions to county ordinance plus coordination with individual jurisdictions to adopt their own ordinances based on the county's. The labor for initial adoption of a Building Energy Reach Code Ordinance was only 0.08 FTE, and that measure needs updated ordinances every three years. The County's Reusable Foodware and Waste Reduction Ordinance is already adopted, and the labor for other jurisdictions to adopt a similar ordinance is assumed to be low, per County guidance. The labor for ongoing enforcement was approved by the County. After Discussion on 4/2, leaving this at 0.5 FTE to account for coordination with jurisdictions adopting their own ordinances per County guidance.
				Compost local supply chains support	*5*	*years/farmer*	Jacobs Industry Best Practice	Moderate	
									Assume funding source has limited reporting requirements - FTE not impacted by funding source. FTE will increase with increased reporting requirement (up to 10 hrs. / month). This is for the management of incentives for electric/solar equipment, which is assumed to be an expansion of the BAAQMD program. The LOE may vary greatly based on the extent of the expansion / level of implementation by the county.
				Support for nursery stock local supply	*20%*	*% of start-up cost*	Jacobs Industry Best Practice	Moderate	
									Brenda Hom 10/23/24 "Probably some additional funding to ensure there are enough native plants to plant. But they will need to find that funding, which might be under Amy Lapin's scope to provide" and Erik de Kok 10/23/24 "Yes. The actual funding source is not known yet. But I think the question is whether program involves seeking financial support and staff time associated with that, which would be a correct assumption." Jacobs assumption: Number for vineyard nursery stock. Assumes Vines at $10,108/acre; custom plant, dig, place cartons, plant vines at $3,888/acre; one time cost of vineyard removal and clean field by hand at $4,500/acre; soil amendments at $870/acre; rip 3x at $975/acre; disc 3x at $270/acre; level at $300/acre.
				Start-up cost for establishing nursery	*$20,911*	*USD/acre*	Jacobs Industry Best Practice	Moderate	
				Average acres per farm	*137*	*acres/parcel*	Jacobs research	High	https://www.nass.usda.gov/Publications/AgCensus/2022/(
				Total crop land in Napa County	*68,190*	*acres*	Jacobs research	High	Just cropland acreage; total farm acreage is 242,403 acres
				Total vineyard land in Napa County	*28,890*	*acres*	Jacobs research	High	Just vineyard acreage

Measure			Assumptions					
#	Emissions Sector	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
				Establish university and community p	*0.20*	*FTEs over task dur*	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices.
				RCAAP webpage development	*0.10*	*FTEs over task dur*	Jacobs assumption	Low	Per 4/2/25 staff discussion, LOE reduced to only include adding a single webpage to an existing website.
				Periodic webpage updates	*0.10*	*FTEs over task dur*	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Other educational resource developr	*0.25*	*FTEs over task dur*	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Categorize carbon capture potential	*0.50*	*FTEs over task dur*	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Develop grant program	*0.50*	*FTEs over task dur*	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Implement and manage grant prograı	*1.50*	*FTEs over task dur*	Jacobs Industry Best Practice	Moderate	
				Grant application assistance	*0.50*	*FTEs over task dur*	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Develop annual workshop program	*0.25*	*FTEs over task dur*	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Implement and manage workshop pr	*0.25*	*FTEs over task dur*	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Develop technical assistance guideli	*0.25*	*FTEs over task dur*	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Collaborate with Napa RCD to develo	*1.00*	*FTEs over task dur*	Jacobs assumption	Low	Brenda Hom 10/23/24 "This will most likely be realized as additional funding for Napa RCD to provide the proposed assistance. Napa RCD is already doing the proposed action, they just need more staff. Probably another 2-4 staff over the next 10 years." Jacobs has dived the 2-4 staff requirement by individual function. Reviewed with Jacobs team and consistent with industry best practices.
				Analyze data from program participar	*1.00*	*FTEs over task dur*	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Support local supply chain for plant s	*0.75*	*FTEs over task dur*	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Average labor rate (all-in cost)	*140*	*USD/hr*	Jacobs assumption	Low	Assumes internal labor for all program development and management labor costs. Assumes no consultant or contractor labor costs.
				Number of farms (including vineyards) in program area	*1772*	# of applicable par	Jacobs research	High	https://www.nass.usda.gov/Publications/AgCensus/2022/(
				Land owner adoption of compost sup	*10%*	%	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Land owner adoption of compost sup	*25%*	%	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices.

Measure			Assumptions					
#	Emissions Sector	Strategy	Measure	Parameter	Value	Unit/Type	Source	Confidence	Notes
									Assume that 50% of all vineyard acres in the county will utilize the compost development incentive . Assume that this incentive will be a continual payment to each farmer for up to 5 years. Assume that the first three year's adoption rate will be 10%, the next three years will be an additional 15%, and the final four years will be 25%.
				Land owner adoption of compost sup	*50%*	%	Jacobs assumption	Low	
				Land owner adoption of compost sup	*50%*	%	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Land owner adoption of native plant s	*1%*	%	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Land owner adoption of native plant s	*2%*	%	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices.
				Land owner adoption of native plant s	*3%*	%	Jacobs assumption	Low	CDFA has offered a similar program. Assume the goal is to establish vineyard nursery stock. Assume 3% of all vineyard acres (2,889 acres) adopt and develop nursery stock for the local supply chain by year 10.
				Land owner adoption of native plant s	*3%*	%	Jacobs assumption	Low	Reviewed with Jacobs team and consistent with industry best practices.

Estimate #: 9
Emissions Sector: Agriculture and Open Space
Strategy: Increase Carbon Storage
Measure: Enhance carbon farming practices in the region

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**red text denotes cells with formulas that must be reviewed and potentially manually updated with any updates to Program Outline or Inputs Matrix tab inputs

Parameters and Assumptions

Demographic

Land types included:	only vineyard acres considered for local supply chain support	
Number of farms and vineyards in program a	1,772	# land parcels
Total crop land in farms	68,190	acres
Average crop land size per farm	38	acres
Total vineyard acres in county	28,890	acres

Adoption

			Includes minor revisions to county ordinance plus coordination with individual jurisdictions to adopt their own ordinances based on the county's. The labor for initial adoption of a Building Energy Reach Code Ordinance was only 0.08 FTE, and that measure needs updated ordinances every three years. The County's Reusable Foodware and Waste Reduction
Year 3			
Land owner adoption of compost local supp	10%	of all landowners in implementation area	
Land owner adoption of native plant stock si	1%	of all landowners in implementation area	
			Assume funding source has limited reporting requirements - FTE not impacted by funding source. FTE will increase with increased reporting requirer
Year 6			
Land owner adoption of compost local supp	25%	of all landowners in implementation area	
Land owner adoption of native plant stock si	2%	of all landowners in implementation area	
Year 10			
Land owner adoption of compost local supp	50%	of all landowners in implementation area	
Land owner adoption of native plant stock si	3%	of all landowners in implementation area	
Year 20			
Land owner adoption of compost local supp	50%	of all landowners in implementation area	
Land owner adoption of native plant stock si	3%	of all landowners in implementation area	

Grants & Material Costs

Average Grant Award			
CFP Grant Award	$10,000		USD/grant
Qualifying CFP Grants/Year	20		
Compost Supply Chain Program Onsite Compost Support	$270		USD/CY
Compost Supply Chain Program Offsite Compost Support	$1,698		USD/CY
Assumed Average Onsite Compost Used	90%		
Assumed Average Offsite Compose Used	10%		
Average Compost Supply Chain Support in $/ton	$578		USD/ton
Average Compost Application Rate		4.50	ton/acre
Compost Supply Chain Program Average Support	$2,602		USD/acre
Compost Supply Chain Support Duration	5		years/farmer
Compost Supply Chain Annualized Support Costs	$1,301		$/acre/yr
Native Plant Supply Chain Program Startup Costs	$20,911		USD/acre
Maximum eligible support for native plant	20%		% of startup costs

Program Costs

	Years	FTEs	Duration (years)	Avg Labor Rate, $/hr	Cost
Establish university and community partnerships	1 to 2	0.20	2	$140	$112,000
RCAAP webpage development	1	0.10	1	$140	$28,000
Periodic webpage updates	1 to 10	0.10	10	$140	$280,000
Other educational resource development	1	0.25	1	$140	$70,000
Categorize carbon capture potential of natural easements	1 to 2	0.50	2	$140	$280,000
Develop grant program	1 to 2	0.50	2	$140	$280,000
Implement and manage grant program	3 to 10	1.50	8	$140	$3,360,000
Grant application assistance	3 to 10	0.50	8	$140	$1,120,000
Develop annual workshop program	1 to 3	0.25	3	$140	$210,000
Implement and manage workshop program	1 to 3	0.25	3	$140	$210,000
Develop technical assistance guidelines	1 to 3	0.25	3	$140	$210,000
Collaborate with Napa RCD to develop CFP	1 to 3	1.00	3	$140	$840,000
Analyze data from program participants, review and update grant program	1 to 10	1.00	10	$140	$2,800,000
Support local supply chain for plant stock and composting	1 to 10	0.75	10	$140	$2,100,000

Total Cost Calculation

	Cumulative Spent				
	Year 3	Year 6	Year 10	Year 20	**Total**
Total CFP Grant Costs	$600,000	$1,200,000	$2,000,000	$2,000,000	$2,000,000
Total Compost Supply Chain Program Costs	$11,274,979	$28,187,447	$75,166,525	$75,166,525	$75,166,525
Total Native Plant Stock Supply Chain Progr	$1,208,238	$2,416,475	$3,624,713	$3,624,713	$3,624,713
Total administrative labor costs	$4,354,000	$7,588,000	$11,900,000	$11,900,000	$11,900,000
Total cost (at today's value)	$17,437,216	$39,391,922	$92,691,238	$92,691,238	**$92,691,238**

Annual Spent																					
Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Total CFP Grant Costs	$0	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Compost Supply Chains Program Cost	$0	$3,758,326	$3,758,326	$3,758,326	$5,637,489	$5,637,489	$5,637,489	$11,744,770	$11,744,770	$11,744,770	$11,744,770	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Native Plant Stock Supply Chain Progra	$0	$402,746	$402,746	$402,746	$402,746	$402,746	$402,746	$302,059	$302,059	$302,059	$302,059	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total administrative labor costs	$0	$1,451,333	$1,451,333	$1,451,333	$1,078,000	$1,078,000	$1,078,000	$1,078,000	$1,078,000	$1,078,000	$1,078,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total spent	$0	$5,812,405	$5,812,405	$5,812,405	$7,318,235	$7,318,235	$7,318,235	$13,324,829	$13,324,829	$13,324,829	$13,324,829	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Real discount rate	1.90%	1.90%	1.90%	1.90%	1.90%	1.90%	1.90%	1.90%	1.90%	1.90%	1.90%	1.90%	1.90%	1.90%	1.90%	1.90%	1.90%	1.90%	1.90%	1.90%	1.90%
Discount Factor		0.98	0.96	0.95	0.93	0.91	0.89	0.88	0.86	0.84	0.83	0.81	0.80	0.78	0.77	0.75	0.74	0.73	0.71	0.70	0.69
Annual net present value (annual)	$0	$5,704,029	$5,597,673	$5,493,300	$6,787,497	$6,660,939	$6,536,741	$11,679,987	$11,462,205	$11,248,484	$11,038,748	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total net present value	**$82,209,602**																				

Results Considerations

To refine this cost estimate the following could be done:
Review and confirm assumptions for local compost supply chain support. This is the largest driver of cost.
Review and confirm the number and cost of CFP grants to be issued.
Review adoption rates to see what is expected specific to County. Generally it is understood that these types of programs historically have low adoption rates based on total acres available.

Additional notes:

Comments received from client:
- An annual discount rate of 1.9% is used for this estimate. This is the 10-year real interest rate on US treasury notes and bonds for the 2025 calendar year per OMB Circular No. A-94.

ATTACHMENT I-2

Memorandum

To: Ascent

From: Amy Lapin and Jes Stevens

Subject: Napa County Regional Climate Action Plan, Funding and Financing Options for Implementation
EPS #232135

Date: May 16, 2025

Introduction

This memorandum presents an overview of funding opportunities and strategies to support implementation of the Napa County Regional Climate Action and Adaptation Plan (RCAAP)—a comprehensive roadmap prepared by Ascent designed to reduce greenhouse gas (GHG) emissions and enhance the region's resilience to climate-related risks. It includes a curated list of potential funding sources aligned with climate actions and adaptation measures anticipated to be led by public agencies.

The following sections of this memorandum include:

- **Executive Summary,** which provides a high-level overview of the memorandum
- **RCAAP Overview and Cost Summary** summarizes the strategies, measures, and actions identified in the RCAAP and the cost of prioritized measures prepared by Jacobs
- **Funding Sources** describes existing and potential new funding options available to Napa County (County) and incorporated cities in the County
- **Funding Strategy and Implementation** provides a high-level strategy for funding RCAAP implementation

Implementing the RCAAP will require a coordinated, long-term investment strategy that draws upon both existing and new sources of funding from public and private entities. While a wide range of funding mechanisms exist, accessing and managing them presents several challenges. Limited public budgets, fragmented and competitive funding sources, and shifting state and federal priorities can constrain the availability and consistency of financial support. Additionally, many climate actions demand high upfront costs and significant administrative effort, requiring jurisdictions to prioritize actions that align with local capacity and offer the greatest long-term benefits. In this context, successful implementation will depend on the County's ability to strategically sequence investments, pursue diverse funding streams, and build partnerships with organizations across sectors—including public agencies, private businesses, nonprofit groups, and community stakeholders—to expand capacity and strengthen support for climate initiatives.

Executive Summary

Like many regions in California, climate change continues to impact Napa County. From prolonged heat waves, and extended droughts, to increased storm severity, or heightened wildfire risks, climate change takes on various forms. The resulting impacts from climate change are just as wide-ranging on people, infrastructure, transit/transportation, the local economy, natural resources, and agriculture, among other assets. Recognizing and addressing these challenges, Napa County Jurisdictions have participated in a collaborative effort to develop the RCAAP.

The purpose of the RCAAP is to serve as a roadmap to address the sources and impacts of climate change. The RCAAP itself is composed of a set of GHG reduction strategies aimed at reducing emissions across all sectors to achieve GHG reduction targets, and climate adaptation measures intended to reduce risk, adapt, and build resilience to the impacts of climate change.

In addition to establishing strategies, measures, and actions to address climate change, the RCAAP details recommended implementation and monitoring measures for the County or local jurisdictions. In order to formulate a plan for implementation and monitoring, a cost assessment was conducted by Jacobs. This cost assessment analyzed a subset of 19 priority measures. Costs were estimated for these priority measures and in total are estimated to cost approximately $1.1 billion. This memorandum summarizes EPS's analysis utilizing the cost assessments to construct a framework for funding implementation of the RCAAP. Four main cost categories and implementation agency(s) identification help establish a framework of funding mechanisms available for implementation.

To establish a framework for implementation of the RCAAP, EPS identified the main cost categories and implementation agencies of the RCAAP. The cost categories and implementation agencies listed below, in **Figure 1,** are described in greater depth in the RCAAP Overview and Cost Summary section of this memorandum.

Figure 1. RCAAP Cost and Implementation Identification Summary

Item	Details
Cost Categories	Program Costs□ Capital Costs Administrative/Labor Costs□ Contracts and/or Material Costs
Implementing Agencies	County Incorporated Cities Shared Implementation (County and Incorporated Cities)

Source: Ascent; Jacobs.

As described in greater detail in the Funding Sources section of this memorandum, each funding source has different requirements and or limits on what can be funded. Existing and potential new funding sources available for implementing RCAAP measures encompass the following broad categories.

- Local funding sources
- Grants
- Loans
- Debt financing mechanisms
- Other sources

To support implementation of the RCAAP, Napa County jurisdictions should pursue a coordinated, diversified approach to funding, combining existing and new public and private funding. Additional strategies for funding and implementation are listed in the funding strategies section of this memorandum.

RCAAP Overview and Cost Summary

Napa County's RCAAP is comprised of GHG reduction measures and climate adaptation measures. Each component includes a set of strategies, measures and actions as defined in the RCAAP:

- **Strategies** are overarching goals and guidelines for adapting to changing climate conditions and climate change effects.
- **Measures** refer to more specific policies or categories of actions intended to achieve the strategies and overarching goals.
- **Actions** are more detailed implementation steps that various actors will take to realize the measures. Actions help break down measures into specific actionable steps, such as programs, projects, etc. Action(s) may not be necessary if the corresponding measure is already sufficiently specific for implementation.

As detailed in the RCAAP, Napa County's GHG reduction strategy includes short- and long-term actions across six emissions sectors: buildings, transportation, solid waste, water, agriculture, and off-road equipment. The plan includes a total of 21 strategies, supported by 46 measures and over 100 short- and long-term actions. Examples of short-term actions focus on expanding incentives, streamlining permitting, updating local codes, and launching outreach and education to drive electrification, active transportation, waste diversion, water conservation, and sustainable land management. Long-term actions build on these foundations by mandating zero-carbon technologies, tightening regulations, expanding infrastructure, and tracking progress to meet 2030 and 2045 climate goals.

In addition, the RCAAP documents the six adaptation strategies, with a total of 40 measures designed to address climate adaptation. Adaptation strategies encompass overall climate resilience, wildfire risk, extreme heat, flooding and sea level rise, drought and water supply resilience, and energy grid reliability. Focus areas include land use planning, infrastructure upgrades, ecosystem restoration, public health and safety, and resource conservation.

Of the full set of strategies and actions included in the RCAAP, Jacobs prepared cost estimates for 19 priority measures, totaling approximately $1.1 billion. Of these costs, prioritized GHG mitigation measures were estimated to cost approximately $771.4 million (see **Table 1,)** and prioritized climate adaptation measures were estimated to cost approximately $360.1 million for prioritized climate adaptation actions (see **Table 2**).[1] These costs reflect only those anticipated to be incurred by the implementing public agencies and not by private parties or community members.[2]

Table 1. Detailed Costs by Prioritized GHG Reduction Measure

Item		Cost Inputs [1]			Total Cost [3]
		Program Costs	Administrative/ Labor Costs	Contracts and/or Material Costs [2]	
GHG Reduction Measure					
BE-1	Clean and Efficient Energy Use in Buildings	$436,787,000	$11,592,000	-	**$448,379,000**
BE-5	New Construction Zero-Carbon Reach Code	-	$1,330,000	-	**$1,330,000**
TR-3	Increase ZEV Fueling Infrastructure	-	$378,000	-	**$378,000**
TR-11	Expand Individual Trip TDM Programs	-	$3,240,000	$100,000	**$3,340,000**
OF-3	Zero Carbon Construction Equipment	-	$177,000	$6,000	**$183,000**
SW-1	Increase Solid Waste Diversion	-	$16,828,000	$50,000	**$16,878,000**
WW-1	Reduce Methane Emissions from WWTPs	-	$2,772,000	$600,000	**$3,372,000**
AG-1	Reduce AG Equipment Fossil Fuel Consumption	$198,021,000	$6,636,000	$95,000	**$204,752,000**
AG-3	Enhance Carbon Farming Practices	$80,800,000	$12,000,000	-	**$92,800,000**
	Total Costs	**$715,608,000**	**$54,953,000**	**$851,000**	**$771,412,000**
	% of Total	*92.8%*	*7.1%*	*0.1%*	*100.0%*

Source: Ascent; Jacobs.

[1] Cost inputs identified by Jacobs Cost Assessment, prepared in March 2025.
[2] Contracts include costs identified for external consultants.
[3] Total costs were prepared by Jacobs over a 20-year horizon and are presented as real dollars (i.e., not discounted).

[1] Cost Estimation, Programmatic Summary of Adoption Measures, Napa County RCAAP, Prepared by Jacobs, March 2025.

[2] Some measures and adaptations include estimates for rebates and/or incentives. These rebates reflect a minimum investment required by the private market to receive respective rebates and/or incentives.

Table 2. Detailed Costs by Prioritized Climate Adaptation Measure

Item		Total Cost [2]	Cost Input [3]
Climate Adaptation Measure			
All-3.2	Wildfire Risk Reduction; Structure Hardening	$86,370,000	Commercial and public rebates Residential rebates Permitting fee reductions Code development
All-5.1	Maintenance measures for Transportation Systems	$960,000	Project management labor Asset-level vulnerability assessment Evaluation of existing maintenance protocols, costs, and capacity Development of new SOPs and maintenance measures
All-7.2	Implement the ISW/GDE Workplan	$2,800,000	Workplan coordination
All-8.3	Resilience Hub Site Selections	$1,030,000	Community vulnerability and needs assessment Hub definition and conceptual prototype design Site selection and framework to operate hubs within a countywide network Develop master plans for 3 pilot resilience hubs County staff labor to manage and execute resilience hub plan with consultants
Fire-5.1	Beetle Infestation Monitoring Network	$2,360,000	Baseline study Monitoring Analysis of monitoring data Program management
Fire-5.2	Forest Thinning	$117,420,000	Forest management Project management labor Project evaluation labor
Temp-2.5	Increase Shading and Reduce Heat Island Effects	$24,210,000	Outreach coordination efforts Baseline assessment Planting/revegetation efforts, including annual maintenance Project management of planting/revegetation Maintenance following planting/vegetation
Flood-2.3	Stormwater Infrastructure Investments	$122,520,000	Sewer capacity upgrades, including construction and project management Labor to maintain the MS4 permit Implementation of CIP projects associated with the MS4 permit
Drought-3.2	Improve Resiliency Standards for Water Infrastructure	$2,040,000	Vulnerability assessment Code development Code implementation management Code review and updates
Energy-4.2	Microgrid Feasibility	$390,000	Project management, study Coordination with MCE Feasibility study
	Total Costs	**$360,100,000**	

Source: Ascent; Jacobs.

[1] Cost inputs identified by Jacobs Cost Assessment, prepared in April 2025.
[2] Total costs were prepared by Jacobs over a 20-year horizon and are presented as real dollars (i.e., not discounted).
[3] Cost estimates for the climate adaptation measures were not prepared to the same level of specificity as the GHG mitigation measures. Categories of cost inputs were identified but costs per input category were omitted.

Funding Sources

Potential funding sources available for implementing the RCAAP have been organized into several categories. The key funding sources are summarized in **Figure 2** and are described in more detail in the sections below**.** Enabled by California State legislation, governments (Counties and Cities) have the authority to create and enforce local ordinances that do not conflict with state law. They also have the power to levy and collect taxes authorized by state law, as well as pursue other funding and financing mechanisms to promote the general welfare of its constituency. Because this enabling authority allows local governments to engage in a wide range of funding and financing mechanisms, the broad power to finance and fund projects by public agencies is often limited by the funding source, the type of project, and project costs eligible to receive funding. All funding sources included in this memorandum are funding options that are available to any of the public agencies (County or incorporated cities in the County) implementing the measures. Therefore, this memorandum, and the resulting implementation strategy focus on matching the cost estimated measures, and general project cost categories, with potential funding options based on the parameters and guidelines of each source. Following a description of each funding option is a concise list of the types of costs and cost estimated measures that can be funded by each source. Existing and potential new funding sources available for implementing RCAAP measures encompass the following broad categories, with more details about specific funding and financing sources under each category provided in the following sections of this memorandum.

- Local funding sources
- Grants
- Loans
- Debt financing mechanisms
- Other sources

The funding options outlined in this memorandum reflect current circumstances and may vary based on public agency priorities, community receptiveness to new funding options (e.g., taxes and assessments), grant funding availability, ongoing economic, socioeconomic, and climate conditions, and other factors.

Figure 2. Summary of Existing and Potential New Funding Sources

Funding Options	Estimated Priority [1]	Eligible Costs [2]				Notes
		Program Costs	Capital Facilities	Admin/ Labor	Contracts/ Materials	
Local Funding						
Existing [3]	High	x	x	x	x	Flexible in use; unrestricted and directed by local decision makers; subject to competing demands; can fluctuate significantly
New	Low-Mod	x	x	x	x	Can be stable, long-term revenue source; requires a simple or super- majority voter approval
Grants	Low-Mod	x	x	x	x	Plentiful options; highly competitive; labor intensive
Loans	Moderate		x		x	Funds upfront costs; does not require voter approval; can have higher interest rates; limited terms
Debt Financing Mechanisms	Mod-High	x	x	x	x	Often have lower interest rates; accompanies a funding measure securing repayment; may require voter approval; additional administration and oversight
Other Sources	Moderate	x	x	x	x	Availability and financial sustainability varies by source

Source: EPS.

[1] Estimated priority represents EPS's qualitative assessment of advantages and disadvantages and the ease and likelihood of securing ongoing, annual funding.
[2] Costs eligible for funding will be dependent on each funding source. This summary presents a general overview of potential eligible costs and will vary by source.
[3] Existing funding sources include General Fund revenues, including local sales tax measures.

Local Funding

Existing General Fund Revenues

The General Fund is the primary operating fund for a city or county and is used to support a broad range of essential public services that are not restricted by law or regulation. Typical expenditures from the General Fund include public safety services such as police, fire, and emergency response; parks and recreation programs; general government operations like administration, planning, and legal services; and the maintenance of public facilities. In some cases, discretionary climate or sustainability initiatives may also be funded through the General Fund if prioritized by local decision-makers.

Revenues deposited into the General Fund generally consist of property taxes, which often represent the largest single source, as well as sales and use taxes, transient occupancy taxes (TOT), business license taxes, utility user taxes, and franchise fees. Additional sources may include fines, service charges, and interest earnings. These revenues are typically unrestricted, giving local governments flexibility in how funds are allocated. However, General Fund revenues are subject to competing demands and can fluctuate significantly based on changing public agency priorities and broader economic cycles.

Capital Improvement Plans (CIPs) are comprehensive capital planning documents used to identify infrastructure facility improvements. A CIP identifies existing and future funding opportunities for capital projects. Additionally, jurisdictions update CIPs on a reoccurring time-based frequency, i.e., annual, biannual, or every 3-5 years, allowing local decision-makers to update project status and funding availability, as well as review project prioritization and/or update individual project infrastructure plans to reflect updates in state building and environmental code. Updating a CIP to include infrastructure improvements that help accomplish GHG reduction measures, or build climate resiliency, is one tool that jurisdictions can utilize to leverage various funding options available.

Sales Tax

Under California Sales and Use Tax Law, state and local sales taxes are imposed on retailers—and typically passed along to the consumer—for the privilege of selling tangible personal property in the state. The authority to levy local sales taxes was established through the Bradley-Burns Uniform Sales and Use Tax Law (Bradley-Burns) passed by the state legislature in 1955 (taking effect January 1, 1956).[3] The Bradley-Burns law created a uniform local sales tax rate of 1.25 percent among cities and counties choosing to levy the tax and required that sales taxes be collected by the state and distributed on a situs basis. As of January 2022, the state imposes a combined state and local sales tax rate of 7.25 percent and allows municipalities and districts to assess an additional local tax rate of up to 3.0 percent (for a total tax rate of 10.25 percent).

The County and some incorporated cities in the County have adopted local sales tax measures that could be used to fund climate-related infrastructure projects and, potentially programmatic measures, in these jurisdictions.

Measure U – Napa County

Measure U, officially known as the Napa Valley Transportation Improvement Act, is a transportation funding measure approved by Napa County voters in November 2024. It extends the existing ½-cent sales tax (originally established by Measure T in 2012) for an additional 30 years, from July 1, 2025, through July 2055, without increasing the tax rate.

[3] For statutory provisions regarding the *Bradley-Burns Uniform Local Sales and Use Tax Law*, refer to Revenue and Taxation Code §7200 et seq.; for the provisions regarding state sales and use taxes, refer to Revenue and Taxation Code §6001 et seq.

The measure is projected to generate approximately $25 million annually for transportation-related projects across Napa County.

Measure U grants the Napa Valley Transportation Authority (NVTA) new bonding authority, allowing it to issue bonds backed by future tax revenues. This enables the agency to fund large-scale transportation projects more quickly by accessing capital upfront rather than waiting for annual revenues to accumulate. In terms of funding allocation, more than 90% of Measure U revenues are designated for maintaining, rehabilitating, and reconstructing local streets and roads across Napa County's cities, towns, and unincorporated areas. Additional funds—up to $56 million—are reserved for regional transportation improvements aimed at relieving congestion along key corridors like Highway 29 and Highway 12. Measure U also sets aside funding for transit fare subsidies to benefit seniors, veterans, students, and people with disabilities.

Measure D – City of St. Helena

In 2016, St. Helena passed Measure D, a ½ cent sales tax. Measure D funds infrastructure, emergencies services, parks, pedestrian/cyclist/traffic safety, and library services. Measure D has no sunset provision.

Measure G – City of Napa

Approved in 2024, Measure G established a new local sales tax of 1 percent to fund essential services and infrastructure improvements. Measure G funds can enhance road maintenance, repair sidewalks, revitalize parks, and support public safety and other critical services.

Measures that could be funded through existing local funding include:

GHG Mitigation Measures
BE-1 - Clean and Efficient Energy Use in Buildings
BE-5 - New Construction Zero-Carbon Reach Code
TR-3 - Increase ZEV Fueling Infrastructure
TR-11 - Expand Individual Trip TDM Programs
OF-3 - Zero Carbon Construction Equipment
SW-1 - Increase Solid Waste Diversion
WW-1 - Reduce Methane Emissions from WWTPs
AG-1 - Reduce AG Equip. Fossil Fuel Consumption
AG-3 - Enhance Carbon Farming Practices

Climate Adaptation Measures
All-3.2 - Wildfire Risk Reduction; Structure Hardening
All-5.1 - Maintenance measures for Transportation Systems
All-7.2 - Implement the ISW/GDE Workplan
All-8.3 - Resilience Hub Site Selections
Fire-5.1 - Beetle Infestation Monitoring Network
Fire-5.2 - Forest Thinning
Temp-2.5 - Increase Shading and Reduce Heat Island Effects
Flood-2.3 - Stormwater Infrastructure Investments
Drought-3.2 - Improve Resiliency Standards for Water Inf.
Energy-4.2 - Microgrid Feasibility

Cost categories that could be funded through existing local funding include:

Program Costs
Capital Facilities
Administration and Labor
Contracts and Materials

New Tax or Assessment

A public agency may consider establishing a new tax or assessment to generate funding for climate action initiatives. These mechanisms can provide a stable, long-term revenue source to support the Plan. The type of funding tool selected—whether a general tax, special tax, or assessment—will influence how the funds may be used, the approval process required, and the level of public support needed.[4]

A general tax is levied for unrestricted general government purposes and may be allocated at the discretion of a city or county to fund any public service. Examples include sales or utility user taxes that flow into the General Fund. A new general tax requires approval by a simple majority of local voters.

In contrast, a special tax is designated for a specific purpose, such as supporting targeted climate actions. Special taxes may fund efforts like tree canopy expansion, building electrification programs, or stormwater infrastructure upgrades. Because these taxes are earmarked for a particular use, they require two-thirds voter approval, as established by Proposition 218. While special taxes can provide a dedicated and predictable revenue stream, achieving the required supermajority vote can be a significant challenge.

An assessment is a charge imposed on properties that receive a direct and measurable benefit from a public improvement or service—such as defensible space maintenance, flood protection, or vegetation management for wildfire mitigation. Unlike taxes, assessments are not based on property value but on the proportional benefit to each parcel. They must be approved through a property-owner ballot and are subject to procedural requirements under Proposition 218. Although assessments can fund localized climate-related improvements, their use is limited to activities with clearly defined and quantifiable property-level benefits.

[4] Various propositions have collectively shaped California's tax landscape by setting stringent requirements for the imposition of taxes and assessments. Proposition 13 caps property tax rates at 1 percent of assessed value, limits annual assessment increases to 2 percent, and requires two-thirds voter approval for new local special taxes, significantly restricting local government revenue in California; Proposition 218 mandates voter approval for local taxes and property-related assessments; Proposition 62 requires majority voter approval for local general taxes; and Proposition 26 broadens the definition of taxes to include many fees and charges, necessitating higher thresholds for approval.

New Administrative, Regulatory, or Development Impact Fees

Development impact fees are ordinance-based, one-time charges on new development designed to cover a "proportional-share" of the total capital cost of necessary public infrastructure and facilities. The creation and collection of impact fees are allowed under AB-1600 as codified in California Government Code Section 66000, known as the Mitigation Fee Act. This law allows a levy of one-time fees to be charged on new development to cover the cost of constructing the infrastructure needed to serve the demands created by the new development. To the extent that required improvements are needed to address both "existing deficiencies" as well as the projected impacts from growth, only the portion of costs attributable to new development can be included in the fee. Consequently, impact fees are commonly only one of many sources used to finance a city's needed infrastructure improvements. Fees can be charged on a jurisdiction-wide basis.

User fees are charges levied on individuals or businesses for the use of specific services provided by a government entity or agency, whereby the benefits of the service are typically directly applied/made available to the user. Examples of user fees include building permit/processing fees, park entrance fees, inspection fees, hazardous waste fees. The State of California allows local jurisdictions to charge user fees for specified services provided directly to individuals and businesses. However, user fees cannot exceed the estimated reasonable cost to provide or perform the activities of the service.

In addition to fees, jurisdictions have the broad authority to enact and enforce local ordinances including the ability to impose fines and penalties for violation of established ordinances. Fines and penalties can act as a deterrent to individuals and businesses that may otherwise choose not to comply with local ordinances and regulations. For example, in the City of Oakland, businesses can face fines of up to $500 if they do not have a compost and recycling collection service (or approved waiver) in compliance with SB 1383 - California's Short-Lived Climate Pollutant Reduction Strategy, which aims to reduce organic waste disposal and greenhouse gas emissions.

Measures that could be funded through new local funding include:

GHG Mitigation Measures
BE-1 - Clean and Efficient Energy Use in Buildings
BE-5 - New Construction Zero-Carbon Reach Code
TR-3 - Increase ZEV Fueling Infrastructure
TR-11 - Expand Individual Trip TDM Programs
OF-3 - Zero Carbon Construction Equipment
SW-1 - Increase Solid Waste Diversion
WW-1 - Reduce Methane Emissions from WWTPs
AG-1 - Reduce AG Equip. Fossil Fuel Consumption
AG-3 - Enhance Carbon Farming Practices

Climate Adaptation Measures
All-3.2 - Wildfire Risk Reduction; Structure Hardening
All-5.1 - Maintenance measures for Transportation Systems
All-7.2 - Implement the ISW/GDE Workplan
All-8.3 - Resilience Hub Site Selections
Fire-5.1 - Beetle Infestation Monitoring Network
Fire-5.2 - Forest Thinning
Temp-2.5 - Increase Shading and Reduce Heat Island Effects
Flood-2.3 - Stormwater Infrastructure Investments
Drought-3.2 - Improve Resiliency Standards for Water Inf.
Energy-4.2 - Microgrid Feasibility

Cost categories that could be funded through new local funding include:

Program Costs
Capital Facilities
Administration and Labor
Contracts and Materials

Federal, State, and Local Grants

Grants

Grant funding is a critical resource that public agencies may use to support implementation of the RCAAP. These funds—offered by federal, state, regional, and local governments, as well as private and philanthropic organizations—can support a wide range of activities, including capital improvements, program operations, planning, and technical assistance. Because each grant program has specific eligibility criteria, restrictions on use, and administrative requirements, it is essential for public agencies to proactively identify grant opportunities that align with their climate goals and capacity. Some grants may require matching funds, exclude administrative costs, or prioritize certain types of projects, making careful alignment and planning crucial.

In the context of limited local resources and increasing competition for external funding, interagency coordination across Napa County is especially important. By collaborating on joint applications, sharing technical expertise, and aligning project priorities, local agencies can improve their competitiveness for federal and state grants, particularly those that emphasize regional strategies, equity, and cross-jurisdictional impact. Examples of such grant opportunities include the California Department of Forestry and Fire Protection (CAL FIRE) Business and Workforce Development (BWD), Wood Products and Bioenergy (WPB), California Forest Improvement Program (CFIP) grants, and the California Energy Commission Community Energy Reliability and Resilience Investment (CERRI) Program.

While grants can be time- and labor-intensive to pursue, they offer an important pathway to pilot new programs, attract outside investment, and demonstrate leadership on climate action. See **Table 3** for a detailed list of RCAAP grant funding options, although some programs highlight other funding tools including loans, technical assistance, and rebate/ incentive programs. This detailed list is not exhaustive and funding windows could differ when local jurisdictions begin to actively coordinate and pursue grant funding opportunities.

Proposition 4

Proposition 4, passed by Voters in November 2024 is a $10 billion general obligation bond measure focused on increasing California's resilience to the impacts of climate changes. The bond prioritizes funding projects in lower-income communities, and allocates the largest portion of funding, $3.8 billion, on water projects, with half of the $3.8 billion dedicated to water quality and the remaining half of the $3.8 billion in funding focused on projects that protect communities from floods and droughts, or other activities like restoring rivers and lakes. Other focus areas for the remaining $6.2 billion in funding include: wildfire and extreme heat projects, natural lands, parks, wildlife, coastal lands, bays, and ocean protection, clean energy projects, and agricultural projects. Much of the funding will be distributed as grants and loans to local governments, Native American tribes, non-profit organizations, and businesses, while some funds will be directly used by state agencies for state-run initiatives.

Measures that could be funded through grant funding include:

GHG Mitigation Measures
BE-1 - Clean and Efficient Energy Use in Buildings
BE-5 - New Construction Zero-Carbon Reach Code
TR-3 - Increase ZEV Fueling Infrastructure
TR-11 - Expand Individual Trip TDM Programs
OF-3 - Zero Carbon Construction Equipment
SW-1 - Increase Solid Waste Diversion
WW-1 - Reduce Methane Emissions from WWTPs
AG-1 - Reduce AG Equip. Fossil Fuel Consumption
AG-3 - Enhance Carbon Farming Practices

Climate Adaptation Measures
All-3.2 - Wildfire Risk Reduction; Structure Hardening
All-5.1 - Maintenance measures for Transportation Systems
All-7.2 - Implement the ISW/GDE Workplan
All-8.3 - Resilience Hub Site Selections
Fire-5.1 - Beetle Infestation Monitoring Network
Fire-5.2 - Forest Thinning
Temp-2.5 - Increase Shading and Reduce Heat Island Effects
Flood-2.3 - Stormwater Infrastructure Investments
Drought-3.2 - Improve Resiliency Standards for Water Inf.
Energy-4.2 - Microgrid Feasibility

Cost categories that could be funded through grant funding include:

Program Costs
Capital Facilities
Administration and Labor
Contracts and Material

Table 3. RCAAP Grant and Other Funding Options Summary

Agency Name [1]	Program or Initiative	Funding Type	Actions	Adaptations	Applicable Funding Programs [1]
FEDERAL AGENCIES					
U.S. Department of Energy	Office of State and Community Energy Programs (SCEP)	Grants Technical assistance	M1		• Local Government Energy Program and Energy Futures Grants
U.S. Department of Energy	Energy Efficiency and Conservation Block Grant Program (EECBG)	Grants	M1		• Energy Efficiency Conservation Block Grants
U.S. Department of Energy	IRA-Funded Technical Assistance for Building Energy Codes	Grants Technical assistance	M1 M2		
U.S. Environmental Protection Agency	Consumer Recycling Education and Outreach Grant Program	Grants	M6		
STATE AGENCIES					
California Department of Forestry and Fire Protection (CAL FIRE)	CAL FIRE Grant Programs	Grants		All-3.2 Fire-5	• Business and Workforce Development (BWD) • California Forest Improvement Program (CFIP) • Forest Health Grants (FH) • Tribal Wildfire Resilience Grants (TWR) • Urban and Community Forestry Grants • Wildfire Prevention Grants • Wood Products and Bioenergy (WPB)
California Transportation Commission (CTC)	CTC Funding Programs	Grants	M4	All-5	•Active Transportation Program •Local Transportation Climate Adaptation Program •Trade Corridor Enhancement Program (TCEP) •SB 1 programs (multiple) •Environmental Enhancement and Mitigation Program
California State Treasurer's Office	California Alternative Energy and Advanced Transportation Financing Authority	Loans Financing options	M1		• California Hub for Energy Efficiency Financing (CHEEF) • Qualified Energy Conservation Bonds (QECBs) • Property Assessed Clean Energy Loss Reserve Program
California Strategic Growth Council (SGC)	SGC Grant Programs	Grants	M4 M8 - M9	All-8.3	• Affordable Housing and Sustainable Communities (AHSC) • Transformative Climate Communities (TCC) • Community Resilience Centers • Sustainable Agricultural Lands Conservation
California Air Resources Board	Sustainable Transportation Equity Project	Grants	M3 - M4	All-5	
CalRecycle	CalRecycle Grant Programs	Grants Loans	M6		• Greenhouse Gas Reduction Grants • Local Conservation Corps Grants (LCC)
California Energy Commission	California Energy Commission Funding Opportunities	Grants Rebates/Incentives	M1 - M3 M5 M8 - M9	Energy-2	• Community Energy Reliability and Resilience Investment (CERRI) Program • Equitable Building Decarbonization Program
California Natural Resources Agency	Urban Greening Program	Grants		Temp-2	
California Department of Conservation California Environmental Protection Agency	Division of Land Resource Protection Grant Programs	Grants		All-3.2 Fire-5	
California Wildlife Conservation Borad	Climate Adaptability and Resiliency Program			Fire-5	

[1] Not an exhaustive list

Table 3. RCAAP Grant and Other Funding Options Summary

Agency Name [1]	Program or Initiative	Funding Type	Actions	Adaptations	Applicable Funding Programs [1]
REGIONAL OR LOCAL AGENCIES					
Pacific Gas & Electric (PG&E)	Resilience Hubs Grant Program	Grants		All-8.3	
Pacific Gas & Electric (PG&E)	Better Together Nature Positive Innovation Grant Program	Grants		All-7 Fire-5 Temp-2 Drought-3	
Marin Clean Energy (MCE)	Community Partnership Program	Grants	M1		• MCE's Emergency Water Heater Incentive
Metropolitan Transportation Commission (MTC)	Climate Program Implementation Grants	Grants	M3 M4		• Regional Mobility Hubs • Parking Management • Charging Infrastructure • Active Transportation Capital Design Technical Assistance
Bay Area Air District (Air District)	Public Agency Grant Funding	Grants	M3 M4		• Climate Tech Finance • Charge! EV station grants • Vehicle Trip Reduction Program • Carl Moyer Memorial Program
PRIVATE AND NGO PHILANTHROPY					
The California Endowment	The California Endowment Grantmaking	Grants	M4	All-5 All-8 Temp-2	

[1] Not an exhaustive list.

Loans

Loans, similar to bonds, can fund projects by borrowing money from lenders to pay for upfront costs. Each lender, and loan program, establishes its own terms, including the length of repayment period, interest rates, and determining what projects and/or costs are eligible for financing. In addition to traditional financing offered by financial institutions like banks or credit unions, the California Infrastructure and Economic Development Bank (IBank) was created specifically to finance public infrastructure and private development that promote a healthy climate for jobs, contributes to a strong economy, and improve the quality of life in California communities. IBank operates pursuant to the Bergeson-Peace Infrastructure and Economic Development Bank Act (Government Code Sections 63000 et seq) and is administered by the Governor's Office of Business and Economic Development. Currently IBank offers two direct lending products focused on providing capital to local governments for financing projects addressing climate solutions.

California Infrastructure State Revolving Fund (ISRF)

The California ISRF is a low-interest loan program administered by the California State Treasurer's Office to support infrastructure improvements by public agencies across the state. It provides flexible financing for a broad range of capital projects, including water and wastewater systems, energy efficiency upgrades, environmental remediation, and transportation infrastructure. Designed to promote long-term sustainability and public benefit, the ISRF helps local governments and special districts implement critical projects by offering favorable loan terms that reduce upfront capital costs. As a revolving fund, loan repayments are recycled back into the program, enabling ongoing investment in California's infrastructure.

Climate Incentive Bridge Loans

Climate incentive bridge loans provide financing for public, private, and nonprofit borrowers that plan to receive incentives like utility or state agency rebates, federal clean energy tax credits, and/or reimbursable grant funds, to finance project costs. IBank currently offers Incentive Bridge Loans ranging from $1 million to $30 million, with maximums up to $100 million for particularly high-impact, creditworthy opportunities.

On-Bill Financing

Other loan programs include the On-Bill Financing Program that allows for zero interest loans when used for public purposes. On-bill financing is an option whereby a utility company can supply capital to a customer wishing to fund energy efficiency upgrades or building retrofits and repayment occurs through regular payments on an existing utility bill. Pacific Gas & Electric (PG&E) currently offers zero-percent financing loans for replacing old equipment with energy-efficient models. Marin Community Choice Energy (MCE) offers Green Property Loans, which are an on-bill repayment financing program specifically for multifamily properties. The program is in partnership with PG&E and borrowers must be PG&E accountholders.

Measures that could be funded through loans include:

GHG Mitigation Measures
BE-1 - Clean and Efficient Energy Use in Buildings
TR-11 - Expand Individual Trip TDM Programs
OF-3 - Zero Carbon Construction Equipment
SW-1 - Increase Solid Waste Diversion
WW-1 - Reduce Methane Emissions from WWTPs
AG-1 - Reduce AG Equip. Fossil Fuel Consumption

Climate Adaptation Measures
Fire-5.2 - Forest Thinning
Temp-2.5 - Increase Shading and Reduce Heat Island Effects
Flood-2.3 - Stormwater Infrastructure Investments
Drought-3.2 - Improve Resiliency Standards for Water Inf.
Energy-4.2 - Microgrid Feasibilit

Cost categories that could be funded through loans include:

Capital Facilities
Contracts and Materials

Debt Financing Mechanisms

Issuing municipal bonds is a process to raise capital by selling debt securities to investors. Bonds are essentially loans that investors provide to the issuer in exchange for periodic interest payments and the return of the principal amount at the bond's maturity. The issuer uses the funds raised through bond issuance for various purposes, such as funding infrastructure projects, expanding operations, or refinancing existing debt. Debt repayment must be supported by a sustainable annual revenue source. There are various types of debt financing tools that could be considered.

General Obligation (GO) Bonds

GO bonds are voter-approved municipal bonds backed by the full credit of the issuing jurisdiction, typically repaid through property taxes. They are often used for major public investments such as civic buildings, parks, or climate-resilient infrastructure, and require a two-thirds majority approval by voters.

Revenue Bonds

Revenue bonds are repaid from a specific revenue stream, such as utility user fees, rather than general tax revenues. These are commonly used to finance infrastructure that generates income. They do not require voter approval and offer flexibility for revenue-generating climate projects. Examples of revenue-generating climate projects include solar and wind farms, carbon offset programs like reforestation and soil carbon farming, and waste-to-energy systems.

Certificates of Participation (COPs)

COPs allow public agencies to finance large capital projects by selling shares in the lease revenues of the project. This instrument avoids the need for voter approval and can be useful for facilities that generate long-term operational value, such as energy-efficient buildings or retrofit programs. Agencies make annual lease payments that fund debt service.

Mello-Roos Community Facilities Districts (CFDs)

CFDs allow local governments to create special districts that levy special taxes on properties within the district to fund public infrastructure and services. These can include green infrastructure, stormwater systems, or wildfire risk reduction projects. CFDs require a two-thirds vote of property owners within the district.

Enhanced Infrastructure Financing Districts (EIFDs)

EIFDs use tax increment financing to capture a portion of the growth in property tax revenue to fund infrastructure and climate-related improvements. They are often used for multi-benefit projects that support sustainability, affordable housing, and economic development. EIFDs do not represent a new tax and therefore do not require voter approval. However, EIFDs divert a portion of General Fund revenues and must be adopted by affected taxing entities.

Climate Resilience Districts (CRDs)

Cities, counties, and special districts are permitted to form CRDs to plan and implement climate mitigation or adaptation projects using tax increment financing (TIF) and other sources of revenue. Eligible costs include projects that address sea level rise, extreme temperatures, and risks related to drought, flooding, and wildfires. CRDs must comply with existing EIFD law. Unlike EIFDs, which rely solely on tax increment revenues, CRDs can levy benefit assessments, special taxes, property-related fees, and other service charges consistent with state law, in addition to tax increment revenues. CRDs can also apply for and receive grants from federal and state agencies, and solicit and accept gifts, fees, grants, and allocations from public and private entities. Like EIFDs, CRDs can issue debt against future district revenue streams.

Green Bonds and Climate Resilience Bonds

Green bonds, also known as climate bonds or sustainable bonds, are a debt financing mechanism that provides financing to projects that produce environmental benefits. Projects that can be financed through green bonds include energy efficiency building upgrades, to clean technology projects. The designation of a 'green' bond signifies to investors that the project benefits the environment and climate.[5] Climate resilience bonds are typically a subset of green bonds and specifically seek to fund projects that address climate resilience and seek to improve assets or systems to support, adapt, and/or transform assets and systems to reduce future climate risk.[6]

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[5] *Green Bonds*. University of California, Berkeley. (n.d.). https://gspp.berkeley.edu/research-and-impact/centers/cepp/projects/green-bonds-market-development-committee

[6] *What are resilience bonds and how can they protect us against climate crises?* Global Center on Adaptation. Gee, A. (2021, August 5). https://gca.org/what-are-resilience-bonds-and-how-can-they-protect-us-against-climate-crises/

Measures that could be funded through debt financing include:

GHG Mitigation Measures
BE-1 - Clean and Efficient Energy Use in Buildings
BE-5 - New Construction Zero-Carbon Reach Code
TR-3 - Increase ZEV Fueling Infrastructure
TR-11 - Expand Individual Trip TDM Programs
OF-3 - Zero Carbon Construction Equipment
SW-1 - Increase Solid Waste Diversion
WW-1 - Reduce Methane Emissions from WWTPs
AG-1 - Reduce AG Equip. Fossil Fuel Consumption
AG-3 - Enhance Carbon Farming Practices

Climate Adaptation Measures
All-3.2 - Wildfire Risk Reduction; Structure Hardening
All-5.1 - Maintenance measures for Transportation Systems
All-7.2 - Implement the ISW/GDE Workplan
All-8.3 - Resilience Hub Site Selections
Fire-5.1 - Beetle Infestation Monitoring Network
Fire-5.2 - Forest Thinning
Temp-2.5 - Increase Shading and Reduce Heat Island Effects
Flood-2.3 - Stormwater Infrastructure Investments
Drought-3.2 - Improve Resiliency Standards for Water Inf.
Energy-4.2 - Microgrid Feasibility

Cost categories that could be funded through debt financing include:

Program Costs
Capital Facilities
Administration and Labor
Contracts and Materials

Other Sources

Funding and financing the RCAAP will require a multi-step, multi-phased approach, and will necessitate jurisdictions to work with the private market to invest in projects that reduce GHGs and adapt to climate change. While the primary purpose of this memorandum is to detail funding and financing mechanisms for public agencies to implement measures, several other sources of funding have been identified to support the private sector meet the RCAAP's goals to mitigate GHGs and build climate resilience.

Carbon Credits

Carbon credits are tradable certificates that represent the reduction or removal of one metric ton of carbon dioxide or its equivalent in other greenhouse gases. These credits can be sold to entities looking to offset their emissions, providing a financial incentive for projects that contribute to emission reductions. Public agencies may generate revenue by developing eligible projects—such as reforestation, methane capture, or renewable energy—that reduce emissions and meet certification standards through recognized registries. These projects can be registered under California's Cap-and-Trade Program, administered by the California Air Resources Board (CARB), or through voluntary offset markets. While there are upfront costs associated with verification and certification, the sale of credits offers a way for jurisdictions to fund climate initiatives.

Public-Private Partnerships (P3s)

P3s involve collaboration between public agencies and private sector partners to deliver infrastructure, services, or programs. For climate-related projects, this might include private investment in microgrids, EV charging stations, or renewable energy installations on public buildings. In exchange for financing or operating the infrastructure, private partners may receive long-term leases, service fees, or revenue-sharing agreements.

Development or Operating Agreements

Jurisdictions can negotiate development or operating agreements that require private entities—such as resort operators, land developers, or utility-scale project developers—to contribute funding or deliver climate-aligned infrastructure as a condition of approval. Examples include requirements for green building certification, water reuse systems, or funding for active transportation improvements.

MCE Flex Market Programs

The MCE Flex Market Programs pay for the grid value of energy savings to help offset the cost of implementing long-term energy efficiency measures. The program provides an upfront cash payment of 25% of the forecasted grid value of energy-efficient projects and can deliver extra payments for additional metered savings beyond the projections.

BayREN

The Bay Area Regional Energy Network (BayREN) **is** a coalition of the nine Bay Area counties—Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma—working collaboratively to promote energy efficiency, water conservation, and greenhouse gas reduction across the region.

Notable programs under BayREN include the EASE Home program, which assists moderate-income homeowners with comprehensive energy efficiency upgrades, and the Bay Area Multifamily Building Enhancements (BAMBE) program, providing cash rebates and no-cost energy consulting for multifamily properties undertaking energy and water upgrades. Additionally, the BayREN Business program supports small and medium-sized businesses through energy efficiency projects aimed at reducing energy consumption and operational costs. BayREN's free consulting services have helped building owners access additional financing options, such as 0% interest loans, alongside cash rebates.

Transportation Fund for Clean Air

The Transportation Fund for Clean Air (TFCA) is a Bay Area program administered by the Bay Area Air Quality Management District (BAAQMD) to reduce air pollution from motor vehicles. Funded by a $4 surcharge on vehicle registrations in the nine-county Bay Area, TFCA generates approximately $22 million annually to support projects that decrease on-road vehicle emissions. TFCA funds are distributed through two primary channels: 60 percent is allocated by BAAQMD via the Regional Fund, and 40 percent is managed locally by designated County Program Managers. Recently funded initiatives included bicycle parking in the City of Napa and EV charging infrastructure in American Canyon.

PG&E Rebates

Residential: PG&E offers rebates for various climate-resilient residential improvements, including portable backup power systems, pre-owned EV purchases, home EV charging installation, energy-efficient thermostats, room air conditioners, water heat pumps, and gas tank water heaters. Additionally, PG&E provides incentives for home energy generation, such as solar panels, wind energy systems, and fuel cells.

Commercial: PG&E also offers industry-specific rebates for businesses seeking energy infrastructure upgrades. Eligible improvements include high- efficiency HVAC systems, refrigerators, insulation, water/pool heating, and laundry equipment. PG&E has designed tailored rebate programs to fit the needs of sectors such as biotech, food service, agriculture, healthcare, schools, hospitality, and more.

TECH Clean California

Funded by the Inflation Reduction Act (IRA) and state funds, the California Energy Commission (CEC) offers various programs that promote energy-efficient home infrastructure. These initiatives provide:

- No-cost energy upgrades for low-income residents and tribal households.
- Rebates for single-family and multifamily property owners installing energy-efficient appliances.
- Incentives for new construction (both market-rate and income-restricted, single-family and multifamily) to encourage all-electric designs and energy storage systems.
- Loan programs supporting public agencies, local governments, and schools in upgrading existing buildings with energy efficiency measures, photovoltaic panels, battery storage, and EV charging stations.

California Energy Commission Settlements

Settlement funds from energy efficiency violations are deposited into the Appliance Efficiency Enforcement Subaccount, which supports public education on appliance energy efficiency and regulatory enforcement pursuant to Public Resources Code 25402. This program is designed to reduce wasteful or inefficient energy consumption and to enhance electrical grid reliability.

Measures that could be funded through other sources include:

GHG Mitigation Measures
BE-1 - Clean and Efficient Energy Use in Buildings
BE-5 - New Construction Zero-Carbon Reach Code
TR-3 - Increase ZEV Fueling Infrastructure
TR-11 - Expand Individual Trip TDM Programs
OF-3 - Zero Carbon Construction Equipment
SW-1 - Increase Solid Waste Diversion
WW-1 - Reduce Methane Emissions from WWTPs
AG-1 - Reduce AG Equip. Fossil Fuel Consumption
AG-3 - Enhance Carbon Farming Practices

Climate Adaptation Measures
All-3.2 - Wildfire Risk Reduction; Structure Hardening
All-5.1 - Maintenance measures for Transportation Systems
All-7.2 - Implement the ISW/GDE Workplan
All-8.3 - Resilience Hub Site Selections
Fire-5.1 - Beetle Infestation Monitoring Network
Fire-5.2 - Forest Thinning
Temp-2.5 - Increase Shading and Reduce Heat Island Effects
Flood-2.3 - Stormwater Infrastructure Investments
Drought-3.2 - Improve Resiliency Standards for Water Inf.
Energy-4.2 - Microgrid Feasibility

Cost categories that could be funded through other sources include:

Program Costs
Capital Facilities
Administration and Labor
Contracts and Materials

Funding Strategy and Implementation

As detailed throughout the Funding Options section, each funding option can fund many of the prioritized actions identified in the RCAAP. **Table 4** summarizes the potential funding sources and matches each source with potential measures that could be funded.

Table 4. RCAAP Funding Sources and Uses

Measure		Funding Opportunities				
		Local Funding	Grants	Loans	Debt Financing Mechanisms	Other Sources
GHG Mitigation Measures						
BE-1	Clean and Efficient Energy Use in Buildings	x	x	x	x	x
BE-5	New Construction Zero-Carbon Reach Code	x	x		x	x
TR-3	Increase ZEV Fueling Infrastructure	x	x		x	x
TR-11	Expand Individual Trip TDM Programs	x	x	x	x	x
OF-3	Zero Carbon Construction Equipment	x	x	x	x	x
SW-1	Increase Solid Waste Diversion	x	x	x	x	x
WW-1	Reduce Methane Emissions from WWTPs	x	x	x	x	x
AG-1	Reduce AG Equipment Fossil Fuel Consumption	x	x	x	x	x
AG-3	Enhance Carbon Farming Practices	x	x		x	x
Climate Adaptation Measure						
All-3.2	Wildfire Risk Reduction; Structure Hardening	x	x		x	x
All-5.1	Maintenance measures for Transportation Systems	x	x		x	x
All-7.2	Implement the ISW/GDE Workplan	x	x		x	x
All-8.3	Reslience Hub Site Selections	x	x		x	x
Fire-5.1	Beetle Infestation Monitoring Network	x	x		x	x
Fire-5.2	Forest Thinning	x	x	x	x	x
Temp-2.5	Increase Shading and Reduce Heat Island Effects	x	x		x	x
Flood-2.3	Stormwater Infrastructure Investments	x	x	x	x	x
Drought-3.2	Improve Resliency Standards for Water Infrastructure	x	x		x	x
Energy-4.2	Microgrid Feasibility	x	x		x	x

Source: Ascent; EPS.

Importantly, as evident in **Table 4 ,** Napa County jurisdictions have multiple options to choose from when considering the best funding source(s) to implement the RCAAP. To support implementation of the RCAAP, Napa County jurisdictions should pursue a coordinated and diversified approach to funding, combining existing and new public and private funding. The following funding strategy outlines key steps to secure and sustain funding.

- Develop a **phased funding roadmap** that sequences implementation based on funding availability, project readiness, and potential for GHG reduction and community co-benefits.
- Prioritize actions that can be implemented relatively easily by identifying actions that have the following characteristics:
  - **Lower estimated cost**,
  - Existing **staffing capacity to redirect** toward implementation,
  - **Capital improvements that can be included** into respective jurisdictional CIPs.
- Based on an evaluation of community priorities and current fiscal conditions, determine the feasibility of contributing existing **General Fund revenues (including funding from local sales tax measures) that can be made available** to fund one-time or ongoing actions.
- Evaluate the funding potential and feasibility of **establishing new dedicated local funding sources** such as a tax increment financing district (EIFD, CRD) or a new tax, assessment, fee, or utility surcharge earmarked for climate mitigation and adaptation efforts.
- **Pursue state and federal grants** by actively monitoring funding opportunities from programs such as the Community Energy Reliability and Resilience Investment (CERRI) Program, CalRecycle Local Conservation Corps (LCC) Grants, or the CalFire California Forest Improvement Program (CFIP). This will require jurisdictions to build internal capacity or hire grant specialists and collaborate across public agencies to increase competitiveness.
- **Utilize public financing tools**, to the extent possible, like the California Infrastructure State Revolving Loan Fund, Climate Incentive Bridge Loans, debt financing mechanisms like GO bonds, COPs, CFDs, EIFDs/CRDs, and climate focused bonds like Geen Bonds or climate resilience bonds.
- Attract private investment by pursuing **public-private partnerships (P3s)** for targeted actions.
- **Coordinate regionally** through the **County's Climate Action Committee** (CAC), and the corresponding **Joint Powers Agreement** to align local priorities, pool funding, determine existing staffing capacity to dedicate towards implementation, and develop joint grant, loan, or other funding option applications for regional-scale investments.