

SDG&E Ag-STAR (Savings, Training, Assistance, and Rebates)

Implementation Plan

10.6.2022

Table of Contents

1	Program Overview	1
1.1	Program Budget and Savings Information	1
2	Implementation Plan Narrative	3
2.1	Program Description.....	3
2.2	Program Delivery.....	4
2.3	Program Design and Best Practices.....	6
2.4	Innovation	9
2.5	Metrics.....	11
2.6	For Programs claiming to-code savings.....	11
2.7	Pilots.....	12
2.8	Workforce Education and Training.....	12
2.9	Workforce Standards.....	12
2.10	Disadvantaged Worker Plan.....	13
2.11	Additional Information.....	13
3	Supporting Documents	13
3.1	Program Manuals and Program Rules.....	13
3.2	Program Theory.....	13
3.3	Process Flow Chart	14
3.4	Incentive Tables and Workpapers.....	14
3.5	Quantitative Program Targets.....	14
3.6	Diagram of Program	14
3.7	Evaluation, Measurement & Verification (EM&V)	14
3.8	Normalized Metered Energy Consumption (NMEC)	14

SDG&E Ag-STAR

1 Program Overview

1.1 Program Budget and Savings Information

1.1.1 Program Name

Agricultural Savings, Training, Assistance, and Rebates (Ag-STAR)

1.1.2 Program ID Number

4009

1.1.3 Budget

Table 1 Overview of the Ag-STAR budget, 2022-2026.

Budget Category	Start-Up	2022	2023	2024	2025	2026	Total
Administrative	NA	\$9,897	\$37,549	\$37,157	\$35,426	\$39,673	\$159,702
Marketing and Outreach	\$50,000	\$2,050	\$41,249	\$48,082	\$39,316	\$58,030	\$238,727
Direct Implementation – Non-Incentive*	NA	\$11,809	\$191,288	\$280,427	\$346,307	\$358,652	\$1,188,483
Direct Implementation – Incentive**	NA	\$7,570	\$86,449	\$125,811	\$166,574	\$173,399	\$559,803
Total EE Budget	\$50,000	\$31,326	\$356,535	\$491,477	\$587,623	\$629,753	\$2,146,714
DR Budget	NA	\$750	\$9,750	\$15,500	\$37,500	\$37,500	\$101,000
Total Budget	\$50,000	\$32,076	\$366,285	\$506,977	\$667,253	\$667,253	\$2,247,714

*DI Non-Incentive are costs relating to implementing Ag-STAR that are retained by Cascade and its subcontractors (e.g., project management, engineering, and audits).

**DI Incentive are payments that directly benefit the customers participating in Ag-STAR (e.g., incentives paid to customers or their contractors).

1.1.4 Gross Impacts

Table 2 Overview of the Ag-STAR energy savings goals, 2022-2026.

Ag-STAR Goals	2022	2023	2024	2025	2026	Total
Net Energy Savings (kWh)	26,578	422,747	597,171	661,619	692,792	2,400,907
Net Energy Savings (Therms)	915	17,021	31,324	60,090	60,090	169,400
Net Demand Reduction (kW)	5	51	68	77	80	281
Total System Benefits	\$45,891	\$457,796	\$434,325	\$616,867	\$689,746	\$2,244,625

1.1.5 Program Cost Effectiveness (TRC)

Table 3 Overview of Ag-STAR cost-effectiveness goals, 2022-2026.

Ag-STAR Goals	2022	2023	2024	2025	2026
Total Resource Cost (TRC)	1.28	1.20	0.82	1.00	1.04

1.1.6 Program Cost Effectiveness (PAC)

Table 4 Overview of Ag-STAR program cost-effectiveness goals, 2022-2026

Ag-STAR Goals	2022	2023	2024	2025	2026
Program Administrator Cost (PAC)	1.48	1.30	0.90	1.07	1.11

1.1.7 Type of Program Implementer

- A. Core
- B. Third Party
- C. Partnership

1.1.8 Market Sector

- A. Residential
- B. Commercial
- C. Industrial
- D. Agricultural

1.1.9 Program Type

- A. **Resource Acquisition**
- B. Emerging Technology Assessment

1.1.10 Market Channel

- A. Upstream
- B. Midstream
- C. **Downstream**

1.1.11 Intervention Strategies

- A. Direct Install
- B. **Incentive**
- C. **Financing**
- D. **Audit**
- E. **Technical Assistance**

2 Implementation Plan Narrative

2.1 Program Description

Ag-STAR offers a suite of energy efficiency services to SDG&E's entire agricultural sector, tailored to their business type, operation size, financial needs, and geography. Ag-STAR leverages innovative energy management principles, training for customers and vendors, high-quality engineering support, creative incentives, and an innovative path to cost-effective energy savings for the small and medium businesses (SMBs) that make up the majority of SDG&E's agricultural customers.

Ag-STAR's core scope includes:

1. Innovative principles to address short- and long-term energy management.
2. Training for customers and vendors to improve program awareness and energy savings persistence.
 - a. For large customers, Training Initiated Engagement (TIE) workshops will focus on equipment operators, weaving in information on integrated demand side management (IDSM), demand management, and water efficiency opportunities. Workshops will be a combination of in-person and live virtual events.
 - b. For SMB customers and vendors that support them, training will feature "self-serve" online video modules including information on IDSM and coupled with marketing strategies to capture savings from SMBs, hard-to-reach (HTR) customers, socially disadvantaged farmers, and customers in disadvantaged communities (DACs).
3. High-quality technical assistance to gain the customer trust required for more comprehensive energy projects and ensure customer satisfaction with the process.
4. Partnerships with trusted market actors to broaden participation.

5. Creative incentives and financing to motivate customers and project advancement.

2.2 Program Delivery

Ag-STAR is designed to occur over a 5-year timeline. The program will be delivered via the following phases:

2.2.1 Recruiting/Outreach

The customer recruiting strategy will follow an approved Marketing Plan. Specific elements of Ag-STAR's customer recruitment strategy will include:

- Establishing publicly accessible database of ag-sector, segment-specific, self-serve training videos with clear paths to deemed measure applications especially for small to medium Businesses (SMBs).
- Providing a simple online incentive application form.
- Offering training and program support for trade allies, vendors, and community-based organizations to promote Ag-STAR's offerings and correct equipment installation to maximize savings.
- Conducting outreach through trusted ag-sector organizations, associations, and specialty-crop organizations, with an emphasis on hard-to-reach (HTR) customers, disadvantaged communities (DAC), and Socially Disadvantaged Farmers.
- Hosting Training Initiated Engagement workshops to engage and enroll large customers.
- Engaging end users at appropriate times (after harvest season).
- Decreasing financial barriers to participation for SMBs through third-party financing and no-cost training by subject-matter experts.
- Recording initial customer engagement in standard customer relationship management (CRM) software to track the recruitment process and prospective eligible customers.
- Complete three targeted email promotion campaigns each year to connect with 4,700 customer accounts.
- Partnering with universities and associated extension programs to identify and promote solutions that leverage new technology for Ag-STAR participants.

2.2.2 Eligibility Screening

Cascade's Ag-STAR implementation team (outreach staff, subcontractors, or trade professional alliance members) will confirm that the customer meets all Ag-STAR eligibility criteria, and that the applicant has the authority to request the incentive or service. This process includes, but is not limited to, confirming the customer is an Agriculture (Ag)-sector customer as determined by SDG&E's criteria (NAICS code or other) and reviewing the utility accounts with SDG&E. The team will then explain the program offering and expectations to the customer, working to define and influence the energy efficiency project. Eligibility screening will include assessments of the potential customer's ability to complete project installation within the Ag-STAR term.

2.2.3 Project Planning

Cascade will finalize the project scope, project timing, savings estimate, measurement and verification (M&V) strategy, and incentive/financing commitment. For custom projects, customers or trade allies will submit an application and a signed commitment form to reserve incentive funding and allow a check to prevent “double-dipping”. For custom projects, approval is required by SDG&E before a customer orders energy efficient equipment. For Normalized Metered Energy Consumption (NMEC) projects, installation of Behavior, Retrofitting, and Operational Efficiency (BRO) measures may begin upon project identification, program enrollment, and gathering of baseline data.

2.2.4 Project Installation

Participating customers or trade allies will install approved energy efficiency measures. All measures must be installed per the manufacturer’s recommendations and comply with the requirements listed in either the Project Feasibility Study or appropriate deemed measure workpaper. Once installation is complete, applicable project completion forms and supporting documentation will be submitted by the customer or trade ally to Cascade.

2.2.5 Review/M&V

All inspections and M&V will be completed by Cascade. Upon acceptance of verified savings, Cascade will pay incentives to customers or pass them through to customer-designated contractors.

2.2.6 Customer Services

Ag-STAR program delivery is accomplished by providing customers with valued training that builds trust and leads directly to projects. Ag-STAR employs a broad reaching recruiting process to engage the greatest number of prospective participants and will offer the following services:

Training Initiated Engagement (TIE) Workshops

Workshops will be a key strategic tool to engage participants early. Workshops will also provide a platform to exchange information on baseline operations, communicate best practices, and help program staff better understand each participant’s energy demand and usage. Workshops will be offered to large customers both in-person and using live virtual events. For small to medium businesses workshops will be presented through asynchronous online video modules.

Energy Audit/Site Visit

Once a customer expresses interest and eligibility requirements have been confirmed, a site visit will be scheduled with customers as appropriate. Site visits will document energy efficiency opportunities and major energy consumers at the facility in a summary report. Measures the customer wishes to pursue will be implemented with a Deemed, Custom, or NMEC path as appropriate. Deemed measures will utilize statewide workpapers and custom measures will follow standard processes for custom project review.

Site Specific NMEC

Through site-specific NMEC where applicable, Ag-STAR will improve the customer experience by streamlining the participation process and allowing more energy and utility bill savings. NMEC allows customers to complete multiple behind-the-meter measures (project bundle) that can be aggregated into a single project application. For eligible on-site loads, we will use site-specific NMEC to capture verified BRO and small capital project savings in compliance with California Public Utilities Commission (CPUC or Commission) M&V requirements. NMEC allows Ag-STAR to capture savings quickly, monitor persistence, and achieve higher Total Resource Cost (TRC) by leveraging the net-to-gross (NTG) ratio of 0.95. One benefit of NMEC is the customer's ability to build momentum in energy efficiency by implementing BRO measures without waiting on Commission staff review. This strategy will open new areas of energy savings, tie savings claims directly to actual performance, increase TRC, and improve customer satisfaction.

Energy Coaching

Each participant will be assigned a single-point-of-contact, knowledgeable energy coach who works to simplify Ag-STAR participation, build trust, break down project implementation barriers, and provide expert technical and project management support. The participant's assigned energy coach will work closely with the participant and designated technical leads to help implement the opportunity register of projects identified during the site visit.

Energy Sensei

Energy Sensei is an interactive, energy tracking platform that will be available for Ag-STAR participants who participate via NMEC or commit to multiple projects. In addition to being home for the opportunity register and a collaboration platform for Cascade, Evaluator, and SDG&E, Energy Sensei will be used to visually display energy savings over time, providing the participant with actionable energy data to encourage project implementation.

Trusted Sources

Cascade will work with universities and associated extension programs to continually improve the breadth of solutions we offer to ag-sector customers, including leveraging new technology and research performed by these institutions to secure more savings and a better customer experience. We plan to work with the following trusted sources:

- UC Davis, CSU Fresno, CalPoly, and the University of CA Cooperative Extension in San Diego, among others.

2.3 Program Design and Best Practices

2.3.1 Outreach

Trade Associations

Trade Association organizations help channel customers into the program. By working within existing communication channels between ag-sector customers and trade associations, Cascade will conduct

successful targeted outreach that activates new customers and provides relevant information about program opportunities and pathways. Ag-STAR will work with the following trade associations or similar organizations to engage new customers:

- Government associations, such as the California Farm Bureau and San Diego County Farm Bureau. The San Diego bureau (1,600 members) has a wide net of education and communication channels we can use to promote the benefits of energy efficiency and the availability of Ag-STAR, including its monthly webinar series, weekly newsletters, and promotions at the AgHub facility in Escondido.
- Industry groups, such as Plant California Alliance, Friends of Farming, Master Gardeners Association, and Escondido Growers to Ag Preservation.
- Specialty Crop Associations, such as California Avocado Society, Resource Innovations Institute, and Association of Cannabis Professionals.
- Community-based Organizations (CBOs), such as the Mixteco/Indigena Community Organizing Project (MICOP) and 4H.

Vendors, Original Equipment Manufacturers, and Distributors

Vendors, equipment manufacturers, and distributors enable energy-saving projects to be implemented. Cascade will work with the new and existing vendors to successfully implement projects, including the following:

- Boiler/steam system vendors and service contractors
- Greenhouse vendors
- Refrigeration vendors and service contractors
- Lighting vendors

2.3.2 Integrated Demand Side Management (IDSM)

Ag-STAR's approach looks beyond energy efficiency solutions to a comprehensive awareness of customer needs and challenges. Accordingly, our energy coaches and engineers will help customers navigate a complex landscape of demand-side solutions by weaving these elements into training events, scoping visits, and one-on-one customer meetings. Relevant IDSM topics include:

- High global warming potential refrigerant change-out: as California evolves to a Total System Benefit (TSB) metric, refrigerant projects can capture significant greenhouse gas (GHG) benefits and contribute to program cost-effectiveness.
- Transport and stationary electrification: Ag-STAR will seek out opportunities to partner with pilot programs offered by SDG&E, the California Energy Commission, or other entities and cross-enroll program participants in electrification demonstration projects for equipment such as short haul trucks, tractors, and diesel engine pumps. This promotion of "fuel-switching" is distinct from gas to electric fuel substitution projects.
- Storage and renewables: Distributed energy resources will offer significant benefits in some grid locations and some rate schedules. Ag-STAR's energy coaches will review relevant opportunities with customers and guide them towards additional information. Cascade believes Energy Sensei can be utilized effectively to provide the scale and timing of Distributed Energy Resources (DER) availabilities at the site level to SDG&E.

Energy Efficiency and Demand Response Integration (EEDRI)

Cascade will integrate energy efficiency (EE) and demand response (DR) to take advantage of opportunities with demand response functionality at little incremental cost and in areas where energy efficiency investment is already incurred, including assistance to customers as the rollout of time-varying electric rates continues to take place. EEDRI is funded separately within the Ag-STAR program budget¹ and will be incorporated into deliverables during implementation. Relevant EEDRI activities include the following:

- Kick off meeting and follow ups specific to EE/DR integration with Ag demand response (DR) and demand side management (DSM) stakeholders, including identification of peak demand drivers, and reviews of 15-minute interval energy consumption data where available.
- Identifying measures that can provide EE/DR benefits.
- Identifying vendors that can support EE/DR measure installations.
- Developing training materials to promote EE/DR integration and peak kW reduction.
- Incorporating EE/DR materials into TIE training.
- Promoting DR measures and projects to appropriate Ag-STAR customers.
- Including EE/DR opportunities in site audit reports.
- Scheduling calls with customers to answer questions and highlight energy and cost savings.
- Subject to budget availability, evaluate DR opportunities and participation with SMB using Energy Sensei.

2.3.3 Program Tracks

Small Business Track (<200kW)

Customers with lower energy demand will be provided access to online, segment-specific online training videos to independently identify project opportunities. Training modules will provide guidance for contacting vendors and implementing deemed projects. Following installation, Ag-STAR staff will assist in the deemed application process and conduct post-installation inspections to collect data and ensure rebates are paid to customers.

If customers on this track are interested in implementing custom projects, an Ag-STAR energy coach will screen and identify valid projects. Ag-STAR staff will review incentive and financing options and provide engineering support and oversight over project installation. Following installation, Ag-STAR engineers will conduct all required M&V and customer incentives will be provided by Ag-STAR.

Large Business Track (>200kW)

This track consists of a one-year site-level engagement and regular energy coaching. Throughout the engagement, Ag-STAR and the customer work together to implement the opportunity register of projects identified during scoping and subsequent site audits. Participants will have access to Energy Sensei to host a detailed and interactive opportunity register and track energy performance over time.

¹ See Table 1

Following a year of engagement, Ag-STAR encourages active participants to renew their commitment and re-enroll in the large business track. Participants will continuously refresh their opportunity registers with new projects and participate in additional TIE trainings focused on energy management practices and principles.

2.3.4 Increased Participation from Underserved Customers in Diverse Geographies

Ag-STAR includes a streamlined participation track for smaller customers to make program engagement easy and straight-forward; higher incentives and support for customers who need it most, including those located in DACs and Socially Disadvantaged Farmers; and information about financing options, including on-bill financing and a third-party financing option, to help alleviate customer concerns about the up-front financial burden of investing in projects. By targeting SMB ag customers within this offering, we eliminate the barrier they face trying to engage with a more general SMB program that may not be relevant to the ag sector.

2.4 Innovation

2.4.1 Energy Sensei

Cascade will use Energy Sensei, our in-house, cloud-based energy management and collaboration software, to manage customer-specific opportunity registers, track savings persistence, and document influence. We expect a boost in net savings (higher NTG) from Sensei's ability to offer actionable energy data, document project influence, and generate savings persistence documentation. Figure 1 shows Energy Sensei and its capabilities.

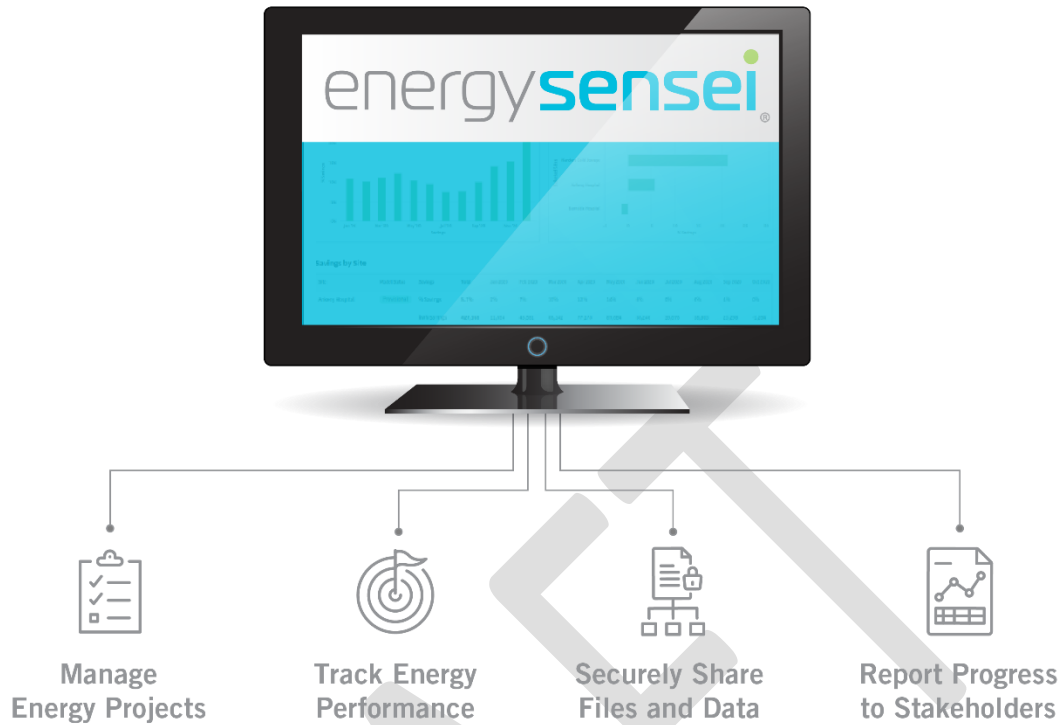


Figure 1 Energy Sensei Offerings

2.4.2 Highly Relevant Free Training for all Customers

Ag-system experts will develop training videos, lead live training-initiated engagement (TIE) workshops, and drive savings by helping activate customers, identify opportunities, eliminate barriers, and improve savings persistence.

2.4.3 Self-serve, Online Video Modules

Online video modules help reach SMB customers cost effectively and ensure additional program resources are spent only on engaged and interested customers.

2.4.4 Creative Incentive Structure to Improve Customer Experience and Satisfaction

Ag-STAR incentives, in addition to valuing net lifetime savings through a tiered structure, offer adders to promote project completion and savings from DACs and Socially Disadvantaged Farmers. Ag-STAR also partners with a third-party subcontractor to provide financing for projects as appropriate.

2.4.5 Leverage NMEC

For large customers (when applicable), Cascade plans to use site-specific NMEC to capture verified BRO and small capital project savings in compliance with CPUC M&V requirements. Specifically, in cold storage and emerging cannabis facilities, NMEC can be used to capture BRO savings not currently addressed in standard utility offerings but that present a highly available source of energy savings within these customer segments.

2.4.6 Intelligent Outreach through Trusted Market Actors

The small-scale, dispersed SDG&E agricultural sector creates the need to engage customers through familiar, established channels. We will coordinate with trade associations, community organizations and educational institutions (including those listed in Section 2.3) to create new customer acquisition channels through resources already influencing customer decisions.

2.4.7 Long-term Single-Point-of Contact Ag Experts

Large customers are assigned a single-point-of-contact energy coach to provide technically competent service, reducing participation barriers. Energy coaches are ag-sector experts. They handle all energy efficiency inquiries from their customers and proactively touch base to review and implement energy projects.

2.4.8 Promote IDSM and Water Savings

Ag-STAR promotes projects that save energy via controls upgrades, which can also be used for load-shifting capabilities. Through training, customers will be educated on opportunities to save during high-demand periods and participate in demand response and time-of-use programs. Ag-STAR trainings will also cover the full lifecycle of farm water use, including energy-intensive water transportation, highlighting opportunities to improve efficiency at each step of the process. Ag-STAR's promotion of BRO projects, use of NMEC approaches when appropriate, and partnerships with trusted vendors will all encourage customers to tune-up and reinvest in their irrigation equipment, delivering water and energy savings in alignment with California policy goals and SDG&E's Business Plan.

2.4.9 Develop New Deemed Measure Workpapers

To continue offering SMB customers a streamlined path to savings, part of delivering Ag-STAR will include developing new deemed measure workpapers—such as adaptive refrigeration controls, high-speed doors for cold storage facilities, subsurface irrigation measures to save water and energy, and VFDs for greenhouses—for CPUC approval.

2.5 Metrics

See Metrics in Attachment 1 – Policy and Procedure Manual.

2.6 For Programs claiming to-code savings

To-code (and to-industry standard practice, or “to-ISP”) savings potential is widely present in the agriculture sector, particularly in facilities more than 20 years old where equipment is not past its useful life but the specifications or applicability of codes have evolved. As a result, many ag sites have grandfathered equipment and systems that remain operable though they operate below code. Perversely, changes to any portion of these systems or equipment can trigger additional upgrades, requiring additional changes to ensure compliance with current code and standards. It is common for customers in this situation to avoid bringing equipment to code as the costs outweigh benefits and the incentive is not sufficient to accelerate turnover. California Assembly Bill 802 and other policies have

explicitly recognized and sought to capture this stranded potential, but the ag sector continues to face unique challenges to cost-effective project scoping and implementation.

To influence these potential projects, measures that capture to-code savings will be a key focus of Ag-STAR; to-code projects are eligible for incentives and savings claims via deemed (if equipment pre-dates code requirements), NMEC, and custom methodologies. For sites using Site-Level NMEC methodologies to determine savings, to-code measures will be identified, listed in project-level reporting, and supported as applicable with documentation of existing equipment operability and program influence in accordance with SDG&E and CPUC guidance and the Ag-STAR Program-Level Evaluation, Measurement & Verification (EM&V) Plan (Attachment 6). Similarly, where allowed by CPUC and SDG&E policy guidance, Ag-STAR may also implement to-code or to-ISP projects via the standard custom project review and approval process.

2.7 Pilots

Pilots are not applicable for Ag-STAR.

2.8 Workforce Education and Training

Workforce education and training is not applicable for Ag-STAR.

2.9 Workforce Standards

2.9.1 Prescriptive Workforce Standards

HVAC and lighting workforce standards (D.18-10-008) may apply to Ag-STAR. A small portion of program savings are expected to come from standalone HVAC and lighting controls projects. For measures where workforce standards apply, Cascade will set expectations at the incentive agreement stage by including compliance-attesting agreements that explicitly state the options for compliance and make the incentive payment contingent upon compliance.

2.9.2 General Workforce Standards

Cascade and our subcontractors will not be directly involved in installing or maintaining equipment as part of Ag-STAR. Program participants will have the flexibility to decide who will install energy efficiency measures under Ag-STAR (employee, vendor, or contractor). To reduce the risk of lost energy savings within the program, the Cascade team will:

- Clearly detail equipment specifications in the program application and in all vendor/ contractor training materials
- Ensure vendors/contractors attest to maintaining necessary licensing and obtaining appropriate permits.
- Audit vendors/contractors for compliance
- Conduct engineering reviews of all custom projects
- Review all deemed applications for qualified projects
- Inspect 5% of all projects to ensure installation meets the program's expectations

2.10 Disadvantaged Worker Plan

Cascade recognizes the importance of working at the program level to expand job access to disadvantaged workers and propose the following:

- We will continue to recruit for workforce diversity, ensuring the language in our job posts is designed to attract a broad, qualified candidate pool.
- We will recognize and pursue the potential for workforce development opportunities within Ag-STAR.
- We will proactively identify and engage diverse business enterprise (DBE) vendors, original equipment manufacturers (OEMs), and distributors, particularly those that work in disadvantaged communities (DACs) or with Socially Disadvantaged Farmers and involve them in the Ag-STAR program. Our subcontractor, Resource Innovations will support this effort. When a new vendor is engaged, we will establish service standards, provide clear incentive, and rebate guidance, and offer applicable energy efficiency education to support continuous growth opportunities for DBEs in SDG&E territory.

In addition to offering relevant operator training, Ag-STAR includes some general workforce development strategies, including:

- Where applicable, we will provide training and education to vendors, OEMs, and distributors working with Ag-STAR to expand the extent to which they participate in utility energy efficiency programming and support ag-sector customers. We will provide guidance to vendors to help them address all opportunities for the ag customers with whom they engage.
- We will reach out to the Industrial Assessment Center (IAC) at San Diego State University to offer program-related and general technical materials to support field assessments. Cascade has a history of hiring candidates from IACs connecting back to the company's founding.²
- Cascade will track these efforts and regularly report progress to SDG&E.

2.11 Additional Information

CPUC Decision 18-01-004 authorized SDG&E's proposal to implement an Agricultural Savings, Training, Assistance, and Rebates program.

3 Supporting Documents

3.1 Program Manuals and Program Rules

See Attachment 1 – Policy and Procedure Manual.

3.2 Program Theory

See Attachment 2 – Program Theory.

² Our former CEO Marcus Wilcox graduated from one of the first IACs in the country before starting Cascade.

3.3 Process Flow Chart

See Attachment 3 – Process Flow Chart.

3.4 Incentive Tables and Workpapers

See Attachment 4 – Incentive Tables and Workpapers.

3.5 Quantitative Program Targets

See Table 2 and Table 3 above.

3.6 Diagram of Program

See Attachment 5 – Diagram of Program.

3.7 Evaluation, Measurement & Verification (EM&V)

See Attachment 6 – Evaluation, Measurement & Verification.

3.8 Normalized Metered Energy Consumption (NMEC)

See Attachment 6 – Evaluation, Measurement & Verification

SDG&E Ag-STAR (Savings, Training, Assistance, and Rebates)

Attachment 1 – Policy and Procedures Manual

10.6.2022

Table of Contents

1	Program Overview	1
2	Program Eligibility	2
2.1	Customers.....	2
2.2	Measures	3
2.3	Contractors.....	6
3	Participating Contractors, Manufacturers, Retailers, Distributors, and Partners	6
4	Additional Services.....	6
5	Audits	7
6	Quality Assurance Provisions.....	7
6.1	Quality Assurance Plan Purpose.....	7
6.2	Quality Assurance Plan Scope	7
6.3	Quality Assurance Methodology	8
7	Other Program Metrics.....	9
7.1	Key Performance Indicators (KPIs)	9

1 Program Overview

Ag-STAR offers a suite of energy efficiency services to SDG&E’s entire agricultural sector, tailored to their business type, operation size, financial needs, and geography. Ag-STAR leverages innovative energy management principles, training for customers and vendors, high-quality engineering support, creative incentives, and an innovative path to cost-effective energy savings for the small and medium businesses (SMBs) that make up the majority of SDG&E’s agricultural customers.

Ag-STAR’s core scope includes:

1. Innovative SEM principles to address short- and long-term energy management.
2. Training for customers and vendors to improve program awareness and energy savings persistence.
 - a. For large customers, training-initiated engagement (TIE) workshops will focus on equipment operators, weaving in information on integrated demand side management (IDSM), demand management, and water efficiency opportunities. Workshops will be a combination of in-person and live virtual events.
 - b. For SMB customers and vendors that support them, training will feature “self-serve” online video modules coupled with marketing strategies to capture savings from SMBs, hard-to-reach (HTR) customers, socially disadvantaged farmers, and customers in disadvantaged communities (DACs).
3. High-quality technical assistance to gain customer trust required for more comprehensive energy projects and ensure customer satisfaction with the process.
4. Partnerships with trusted market actors to broaden participation.
5. Creative incentives and financing to motivate customers and project advancement.

Ag-STAR is implemented by Cascade Energy Inc. (“Cascade”) under contract to San Diego Gas & Electric (SDG&E). Table 1 shows key dates for the program.

Table 1 Key Program Dates

Milestone	Date
Advice Letter Approval	August 29, 2022
Begin program implementation activities	December 1, 2022
End program implementation activities	December 31, 2026
Final date for program implementation activities	December 31, 2027

Ag-STAR involves three key parties:

- **Customer (Applicant):** An eligible agricultural ratepayer who is applying for incentives through the Ag-STAR program.
- **Implementer (Cascade Energy):** Ag-STAR is implemented by Cascade Energy under contract to SDG&E.
- **Program Administrator (SDG&E):** At the direction of the California Public Utilities Commission (CPUC or Commission), SDG&E serves its customers with a portfolio of energy efficiency and demand response programs, including third party programs such as Ag-STAR.

2 Program Eligibility

2.1 Customers

Ag-STAR aims to capture customers in the SDG&E Agriculture customer segment. San Diego County has over 268,000 acres dedicated to agriculture, producing over \$1.8 billion in annual revenue from almost 200 distinct crops. Over 40 crops exceed \$1 million each in revenue. The largest contributors are nursery and cut flower products, avocados, citrus, tomatoes, and strawberries. Other significant products include mushrooms, eggs, poultry, dairy, and apiary. In some cases, growing operations integrate refrigerated storage and post-production processing forming diversified companies.

Specifically, Ag-STAR serves customers with the following designation codes listed in, but not limited to, Table 2 from the North American Industry Classification System (NAICS):

Table 2 Eligible Customer NAICS Codes for Enrollment in Ag-STAR

NAICS Code	Segment
111, 112, 113, 114, 115	Farms: <ul style="list-style-type: none"> • Fruits, Nuts, & Vegetables • Livestock and Poultry, including Ranching
	Greenhouses & other Indoor Grow Facilities
	Nurseries & Cut Flowers
	Cold Storage
424, 493	
2213	Water Transport, Wholesaler
312130	Wineries (If applicable)
312130	Breweries (If applicable)

Additional eligibility requirements include:

- Ag-sector customers with active accounts with SDG&E

2.2 Measures

The deemed and custom measures in Table 3 are included in the approved program catalog. Any measure additions, deletions and updates to the program catalog must receive written approval from SDG&E prior to implementation.

Table 3 Ag-STAR Approved Measures

Approved Measure	Measure Type	Unit
Ag Ventilation Fan VSD (1 to 3 HP)	Deemed	Rated-HP
Agricultural high efficiency recirculation or circulation fan	Custom	Each
Agricultural pump system overhaul (>= 500HP)	Custom	Each
Agricultural pump system overhaul (100 to 249 HP)	Custom	Each
Boiler blowdown Optimization	Custom	Therm
Building Envelope – Greenhouse – Insulated Siding	Custom	Therm
Clean Water Pump High PEI Constant 3 <= HP <= 50	Deemed	Rated-HP
Comprehensive upgrade – retrofit of refrigeration system	Custom	Each
Compressed air pressure setting	Custom	Each
Condensate recovery	Custom	Therm
Dust Collection Fan VSD (50hp motor)	Deemed	Each
Efficient Ag Ventilation Fans 36 inch	Deemed	Each
Efficient VFD Ag Pumps Booster	Deemed	Rated-HP
Efficient VFD Ag Pumps Well	Deemed	Rated-HP
Evaporator fan controller	Custom	Each
Fluid Pump -VFD – Add-on Equipment	Custom	Each
Glycol Pump VFD, Winery 10HP	Deemed	Each
Glycol Pump VFD, Winery 15HP	Deemed	Each

Table 3 Ag-STAR Approved Measures

Glycol Pump VFD, Winery 20HP	Deemed	Each
Glycol Pump VFD, Winery 25HP	Deemed	Each
Glycol Pump VFD, Winery 3HP	Deemed	Each
Glycol Pump VFD, Winery 5HP	Deemed	Each
Glycol Pump VFD, Winery 7.5HP	Deemed	Each
Heat Recovery	Custom	Therm
Heating – Greenhouse Heat Curtain	Deemed	Area-ft ²
Heating – Greenhouse Heat Curtain	Deemed	Area-ft ²
HVAC – Space Cooling – Economizer – Waterside Economizer	Custom	kWh
HVAC – Space Cooling – Air Distribution – Air Flow Motor	Custom	kWh
HVAC – Space Cooling – Cooling Tower Upgrades – Packaged System	Custom	kWh
HVAC – Vent Air Dist. – Controls/Controlling Equip – Air Flow	Custom	kWh
Indoor Horticulture lighting	Custom	Each
IR film on double layer polyethylene greenhouse	Deemed	Area-ft ² -
Lighting – Interior – LED Fixture	Custom	kWh
NMEC Agricultural Operational	Custom	Each
Pipe Insulation 1inch Insulation 1 inch < pipe <= 4inch Hot Water_Outdoor	Deemed	Len-ft
Process – Cooling – Evap Cooler	Custom	kWh
Process – Pumping – Motor (Agriculture)	Custom	kWh
Process – Pumps – Motor and Pump (Agriculture)	Custom	kWh
Process Boilers Condensing Economizer 87.2%	Deemed	Cap- kBTUH
Process Boilers, Feedwater (Single Stage) Economizer, 81.4% TE	Deemed	Cap- kBTUH
Process Heat – Boiler – Steam	Custom	Therm
Process motor – VFD	Custom	Each

Refrigeration – Controls	Custom	kWh
Refrigeration – New Refrigeration Case w/Doors-Low Temperature Case	Deemed	Each
Refrigeration – New Refrigeration Case w/Doors-Medium Temperature Case	Deemed	Each
Refrigeration compressor	Custom	Each
Refrigeration temperature setpoints	Custom	Each
Tier 2 Mid-tier Specification VFD on Ag Booster Pumps <=75hp	Deemed	Rated-HP
Tier 2 Mid-tier Specification VFD on Ag Booster Pumps >75hp to <=150hp	Deemed	Rated-HP
Tier 2 Mid-tier Specification VFD on Ag Well Pumps <=75hp	Deemed	Rated-HP
Tier 2 Mid-tier Specification VFD on Ag Well Pumps >75hp to <=600hp	Deemed	Rated-HP
Tier 3 Enhanced Specification VFD on Ag Booster Pumps <=75hp	Deemed	Rated-HP
Tier 3 Enhanced Specification VFD on Ag Booster Pumps >75hp to <=150hp	Deemed	Rated-HP
Tier 3 Enhanced Specification VFD on Ag Booster Pumps <=75hp	Deemed	Rated-HP
Vacuum Pump – VFD – Add-on Equipment	Custom	Each
Ventilation fan VFD	Custom	Each
VFD on Ag well pump serving non-pressurized system – add-on equipment	Custom	Each
VFD on dust collector	Custom	Each

2.2.1 Deemed

Deemed measures are prescriptive measures supported by CPUC-approved statewide workpapers that define energy savings values by building type, climate zone, etc.

If technologies are identified that are well-suited to the deemed platform and the measure is not active in the Electronic Technical Resources Manual (eTRM), and Company or Statewide Measure Packages are not available for the Measure, Ag-STAR will contribute to the development and approval of new deemed measures and expand its deemed portfolio accordingly with the approval of the SDG&E Program Manager. When developing Measures, Cascade will follow the latest version of the Statewide Deemed Rulebook found on the Cal TF website as well as all Cal TF requirements and guidelines, including the Measure Development and Peer Review QA/QC guidelines.

2.2.2 Custom

Non-deemed (“custom calculated”) measures (developed for a specific project) shall be submitted to SDG&E and require SDG&E Engineering Support review and written approval before installation. For such measures, Cascade shall follow the SW Custom Project Guidelines and all SW documentation and workbooks outlined. Cascade shall work with SDG&E to ensure that the SW Custom Guidelines are being followed and adhered to. Any non-workpaper customized measures shall be submitted in the Statewide Custom Projects Review Guidance documents format as posted on the public CPUC website.

2.2.3 Site-Specific NMEC

All savings claimed through the Normalized Metered Energy Consumption (NMEC) platform will follow the CPUC NMEC Rulebook. Full M&V details are outlined in Attachment 6: Evaluation, Measurement and Verification Plan.

2.3 Contractors

SDG&E authorizes Cascade to utilize the Subcontractors in Table 4 in performing and providing the Services.

Table 4 SDG&E Approved Subcontractors for Ag-STAR

Subcontractor Business Name	Work Description
Resource Innovations	Support outreach and marketing
National Energy Improvement Fund	Third-party financing services

3 Participating Contractors, Manufacturers, Retailers, Distributors, and Partners

Upstream and midstream incentives are not applicable for Ag-STAR.

4 Additional Services

In addition to facilitating incentives, rebates, and financing for ag-sector customers, Ag-STAR program design includes several innovative features, including a large or small customer track based on energy demand. Additional program elements include TIE workshops, segment-specific online training videos, and customer access to Cascade’s Energy Sensei energy management platform. These are all part of the general Ag-STAR program delivery and no further additional services are provided.

5 Audits

Outside of the M&V processes outlined in Attachment 6 – Evaluation, Measurement and Verification Plan, no additional audits are required.

6 Quality Assurance Provisions

Cascade is committed to providing quality services that meet the performance, cost, and schedule requirements of our clients and customers. Our processes are established on practices, tools, and software that generate consistently reliable results. Our workflow management tools integrate fundamental management and communication techniques, technical processes, and tools into an approach focused on the quality of deliverables. Cascade’s team concentrates on continuous improvement of business processes, customer satisfaction, and continuous quality measurement of delivered services, while identifying opportunities for process improvements.

The success of Cascade’s programs and projects are made possible by adherence to proven quality standards and established QA methods that enable us to offer our clients:

- Energy efficiency and sustainability programs that use mature, well-defined, and repeatable processes.
- Use of proven measurement and verification (M&V) techniques.
- Use of beneficial, cost-effective, IT, data communications, and marketing tools and methodologies.

6.1 Quality Assurance Plan Purpose

Cascade has developed the following quality assurance (QA) plan to demonstrate how our team will monitor, assess, and ensure adherence to processes, procedures, and standards to determine the quality and on-time delivery of all deliverables and services for the program. This plan will serve as the blueprint for maintaining consistent quality through all components of the project and in each task.

The QA plan documents the procedures by which the team assesses performance for all aspects of the program against contractual requirements. The plan describes the approach for activities, including program tracking and reporting, process reviews, program audits, project engineering analyses and reports, procedures, and techniques for implementing and sustaining overall quality for the program.

6.2 Quality Assurance Plan Scope

Cascade has created a QA framework to form the basis of the complete quality management approach and strategy. The processes defined in the plan will be leveraged to implement quality in all aspects of performance.

The objective of the QA plan is to describe the roles and responsibilities and the policies and procedures that ensure consistency and quality throughout the projects. The objective enables the QA team to achieve critical measurable results for the program such as:

- **Predictable Results:** The QA plan is to ensure that deliverables and services are produced in an efficient, effective, reliable, and predictable manner that will consistently produce results compliant with the contractual requirements of the program.
- **Error Prevention:** The QA plan prevents the introduction of errors into deliverables and services. Any errors that are found undergo analysis and subsequent action to preclude reintroduction of the error. This aspect of the QA plan includes the structured approach to pursuing continuous improvement in all aspects of the program.
- **M&V Documentation:** The QA plan ensures a structured approach to the defining, recording, and storing of documentation related to requirements, approvals, reviews, tests, decisions, actions, events, and problems and improvement measures to support verification, validation, and traceability.
- **Customer Satisfaction:** The QA plan ensures the customer receives the best possible deliverables and services. Customer satisfaction surveys will be conducted so that participants may comment on the program and Cascade. Surveys will be conducted either by mail, email or by telephone. The results of the survey will be entered into the database management tool.
- **Continuous Improvement:** Feedback from all the above is used in an ongoing effort to improve the program's processes. Results from the survey will be quantified and shared with the program sponsor.

6.3 Quality Assurance Methodology

For each program or project, the QA team will be consulted on the approach to baseline operations and how measure implementation will be confirmed. Primarily, for measures needing custom calculations, energy savings will be based on the baseline performance data collected by field measurements by the Cascade team.

The QA team will be apprised of the analysis approach. When energy savings analysis is completed for each project, the analysis will be independently reviewed by the QA team to confirm agreement with the savings estimates and approach to the savings estimates for the measures. The review methodology will be established to examine processes against quality factors through the use of Cascade's workflow management tools, such that the QA checks and results must be recorded for the project to move to the next stage. Examples of quality factors include:

- **Correctness:** The extent to which a deliverable satisfies the requirements and the stated objectives.
- **Timeliness:** The deliverable is provided when required.
- **Reliability:** The extent to which a deliverable is provided on a consistent basis.

- **Productivity:** The number of resources to correctly produce the deliverable, including the relationship between the amounts of time needed to accomplish work and the effort expended.

Cascade will maintain a clear record of all project findings, including on-site notes, building and equipment data, and operating characteristics. Secondary review of randomly selected projects will periodically check the QA process to ensure that:

- The QA process has been followed, verified by checking that all data and required checks are recorded.
- The project results are reasonable, verified by recalculating results using a secondary methodology such as engineering calculations.
- Project documentation is complete.

7 Other Program Metrics

7.1 Key Performance Indicators (KPIs)

Table 5 and Table 8 identify the Key Performance Indicators (KPIs) for Ag-STAR and describe how each KPI will be tracked. These KPIs will be the primary means of assessing Ag-STAR's performance on an ongoing basis with tracking of KPIs on a monthly basis and development of a KPI score on a quarterly basis. The quarterly KPI score will be a cumulative calculation, taking into account the preceding quarter's data. For example, if Cascade does not meet the Q1 KPI score, but in Q2 is able to achieve a 2.0 or higher, they will recoup their KPI retention for both Q1 and Q2. The goals referred to herein refer to the program goals listed in Table 2 and Table 3 of the Implementation Plan. Savings, Incentives and Total Resource Cost (TRC) metrics shall be derived from the quarterly Cost Effectiveness Tool (CET). Projects must be represented in the Energy Efficiency Collaboration Platform (EECP) to populate the CET. KPIs will be reviewed annually and updated based on changes to individual measure savings or CET inputs which will affect TRC.

In general, the KPI ratings will be based on a 0-4 scale:

0: Unsatisfactory

1: Below expectations

2: Meeting expectations

3: Exceeding expectations

4: Greatly exceeding expectations

Table 5 Key Performance Indicators for 2022-2023

ID	Weight	Category	Description	Scoring	Continuous Monitoring Mechanisms
1	20%	Program Performance: kWh Savings (net 1 st Year savings)	To date, % achieved of net 1 st Year kWh savings required under the Agreement, based on planned savings acquisition rate	0: less than 60% 1: 60 – 79% 2: 80 – 100% 3: 101 – 120% 4: greater than 120%	EECP
2	5%	Program Performance: kWh Savings (net 1 st Year savings)	To date, % achieved of net 1 st Year kWh savings required under the Agreement, based on planned savings acquisition rate for the reporting year	0: less than 60% 1: 60 – 79% 2: 80 – 100% 3: 101 – 120% 4: greater than 120%	EECP
3	15%	Program Performance: Therm Savings (net 1 st Year savings)	To date, % achieved of net 1 st Year Therm savings required under the Agreement, based on planned savings acquisition rate for the reporting year	0: less than 60% 1: 60 – 79% 2: 80 – 100% 3: 101 – 120% 4: greater than 120%	EECP
4	15%	Program Performance: TRC Ratio	Program’s TRC ratio based on measure installations and compensation to date*	0: <1.1 1: >=1.1 to <1.25 2: >=1.25 to <=1.35 3: >1.35 to <=1.45 4: >1.45	CET Tool

Table 6 Key Performance Indicators for 2022-2023

5	5%	Compliance/Program Performance (Energy Savings): Reporting Accuracy	Average % variance between the forecasted energy savings figures at the start of the reporting period and actual figures at the end of the reporting period	0: greater than 50% 1: 25 – 50% 2: 15 – 25% 3: 5 – 15% 4: less than 5%	Quarterly Report
6	5%	Compliance/Program Performance (Budget Utilization): Reporting Accuracy	Average % variance between the forecasted expenditures and accrual figures at the start of the reporting period and actual figures at the end of the reporting period	0: greater than 50% 1: 25 – 50% 2: 15 – 25% 3: 5 – 15% 4: less than 5%	Quarterly Report
7	5%	Marketing: Enrollment of Customers	# of customers to date who take action as defined in the marketing plan divided by # of customers forecasted per the marketing plan	0: less than 70% 1: 71 – 80% 2: 81 – 90% 3: 91 – 95% 4: greater than 96%	Monthly Report
8	5%	Customer Satisfaction: Survey Scoring	Average score of customer satisfaction surveys administered by Cascade (Assuming a 5-point scale where 5 is highly satisfied)	0: less than 2.9 1: 3.0 – 3.9 2: 4.0 – 4.5 3: 4.6 – 4.8 4: greater than 4.8	Quarterly Report

Table 7 Key Performance Indicators for 2022-2023

9	5%	Customer Satisfaction: Complaints Received	# Of complaints received over the course of the most recent quarters (rolling year)	0: 4 or more complaints 1: 3 complaints 2: 2complaints 3: 1 complaint 4: Zero complaints	Quarterly Report
10	5%	Compliance: HTR/DAC/Socially Disadvantaged Farmers Penetration	To date, % of program savings from HTR/DAC/Socially Disadvantaged Farmers markets (average of kWh, kW, Therms)	0: Less than 2% 1: 3 – 4% 2: 5 – 6% 3: 7 – 8% 4: Greater than 8%	Quarterly Report
11	10%	Compliance/Program Performance	% of SDG&E inspections that pass on the first attempt. SDG&E will inspect a percentage of projects to ensure accuracy and validate savings	0: less than 85% 1: 85 – 89% 2: 90 – 94% 3: 95 – 99% 4: 100%	EECP

Table 8 Key Performance Indicators for 2024-2026

ID	Weight	Category	Description	Scoring	Continuous Monitoring Mechanisms
1	45%	Total System Benefit (TSB): Expressed in dollar terms of the energy, capacity & GHG benefits for 2024.	To date, % achieved of total TSB dollar value under the Agreement split on an even pro rata basis	0: less than 70% 1: 70 – 89% 2: 90 – 100% 3: 101 – 120% 4: greater than 120%	EECP

Table 9 Key Performance Indicators for 2024-2026

4	10%	Program Performance: TRC Ratio	Program’s TRC ratio based on measure installations and compensation to date.*	0: <0.9 1: >=0.9 to <1.0 2: >=1.0 to <=1.15 3: >1.15 to <=1.25 4: >1.25	CET Tool
5	5%	Compliance/Program Performance (Energy Savings): Reporting Accuracy	Average % variance between the forecasted energy savings figures at the start of the reporting period and actual figures at the end of the reporting period.	0: greater than 50% 1: 25 – 50% 2: 15 – 25% 3: 5 – 15% 4: less than 5%	Quarterly Report
4	5%	Compliance/Program Performance (Budget Utilization): Reporting Accuracy	Average % variance between the forecasted expenditures and accruals figures at the start of the reporting period and actual figures at the end of the reporting period.	0: greater than 50% 1: 25 – 50% 2: 15 – 25% 3: 5 – 15% 4: less than 5%	Quarterly Report
7	5%	Marketing: Enrollment of customers	# of customers to date who take action as defined in the marketing plan divided by # of customers forecasted per the marketing plan.	0: less than 70% 1: 71 – 80% 2: 81 – 90% 3: 91 – 95% 4: greater than 96%	Monthly Report
8	5%	Customer Satisfaction: Survey Scoring	Average % variance between the forecasted expenditures and accrual figures at the start of the reporting period and actual figures at the end of the reporting period	0: less than 2.9 1: 3.0 – 3.9 2: 4.0 – 4.5 3: 4.6 – 4.8 4: greater than 4.8	Quarterly Report

Table 10 Key Performance Indicators for 2024-2026

9	5%	Customer Satisfaction: Complaints Received	# Of complaints received over the course of the most recent quarters (rolling year)	0: 4 or more complaints 1: 3 complaints 2: 2complaints 3: 1 complaint 4: Zero complaints	Quarterly Report
10	5%	Compliance: HTR/DAC/Socially Disadvantaged Farmers Penetration	To date, % of program savings from HTR/DAC/Socially Disadvantaged Farmers markets (average of kWh, kW, Therms)	0: Less than 2% 1: 3 – 4% 2: 5 – 6% 3: 7 – 8% 4: Greater than 8%	Quarterly Report
11	5%	Compliance/Program Performance	% of SDG&E inspections that pass on the first attempt. SDG&E will inspect a percentage of projects to ensure accuracy and validate savings	0: less than 85% 1: 85 – 89% 2: 90 – 94% 3: 95 – 99% 4: 100%	EECP
12	5%	Program Performance/ Customer Satisfaction	Average score on new question added to customer satisfaction survey asking customers if they feel their understanding of IDSM, DR, and water efficiency opportunities has increased after participation in Ag-STAR.	0: <75% indicate increase in understanding 1: 76-80% 2: 81-90% 3: 91-99% 4: 100	Quarterly Report

*Solely for the purpose of calculating whether Implementer has met a TRC goal or met such KPI score, the Parties shall include, as a part of the costs of the Program, the compensation that would be payable to Implementer as if Implementer had met the requisite TRC goal and KPI score required to accrue such remaining 20% of the cost per unit.

SDG&E Ag-STAR (Savings, Training, Assistance, and Rebates)

Attachment 2 – Program Theory

10.6.2022

Program Theory

The Program Logic Model in Figure 1 below visually explains the underlying theory supporting the sub-program intervention approach.

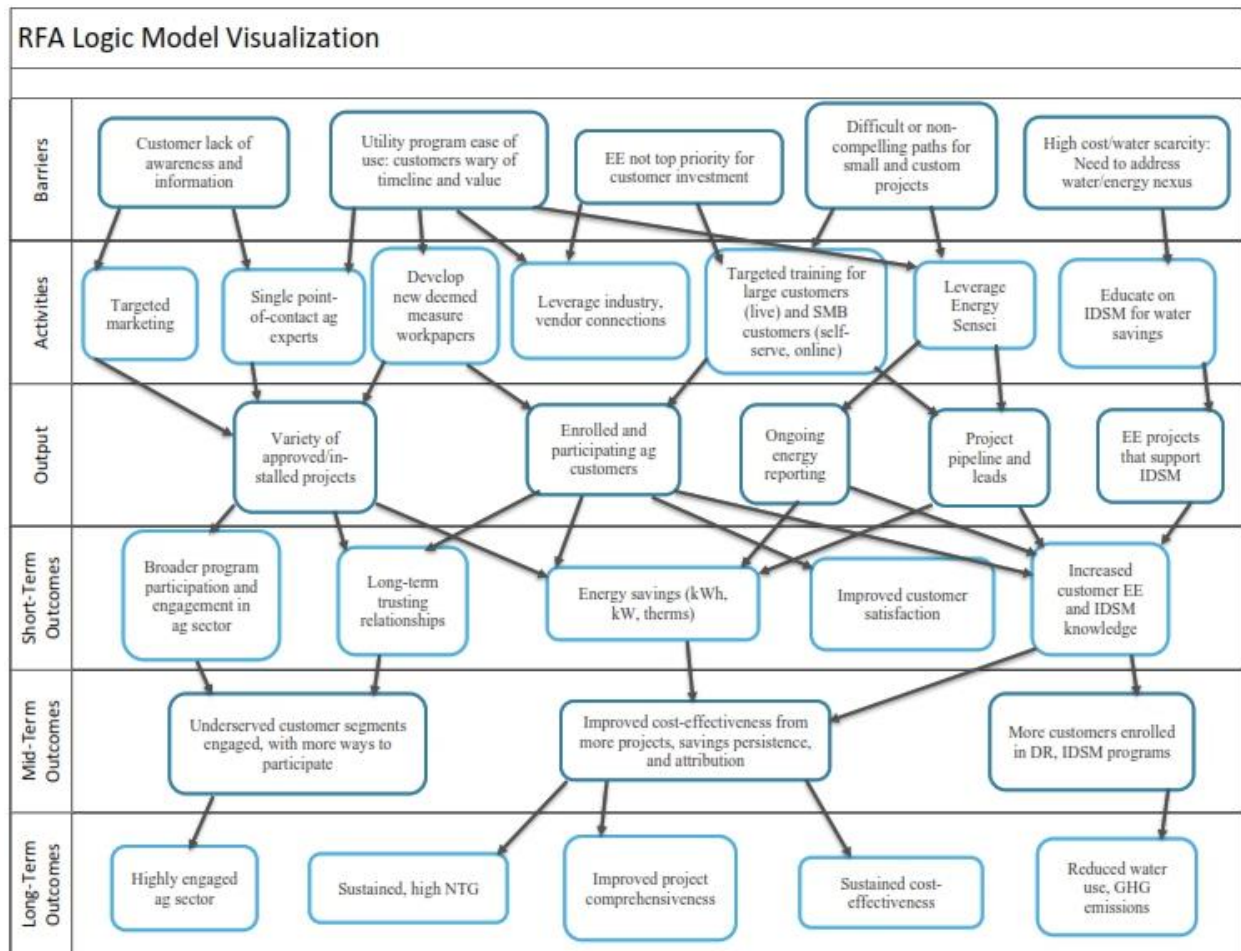


Figure 1 Ag-STAR Program Logic Model

SDG&E Ag-STAR (Savings, Training, Assistance, and Rebates

Attachment 3 – Process Flow Chart

10.6.2022

1 Process Flow Chart

Figure 1 illustrates program flow for both large and small customers enrolled in Ag-STAR.

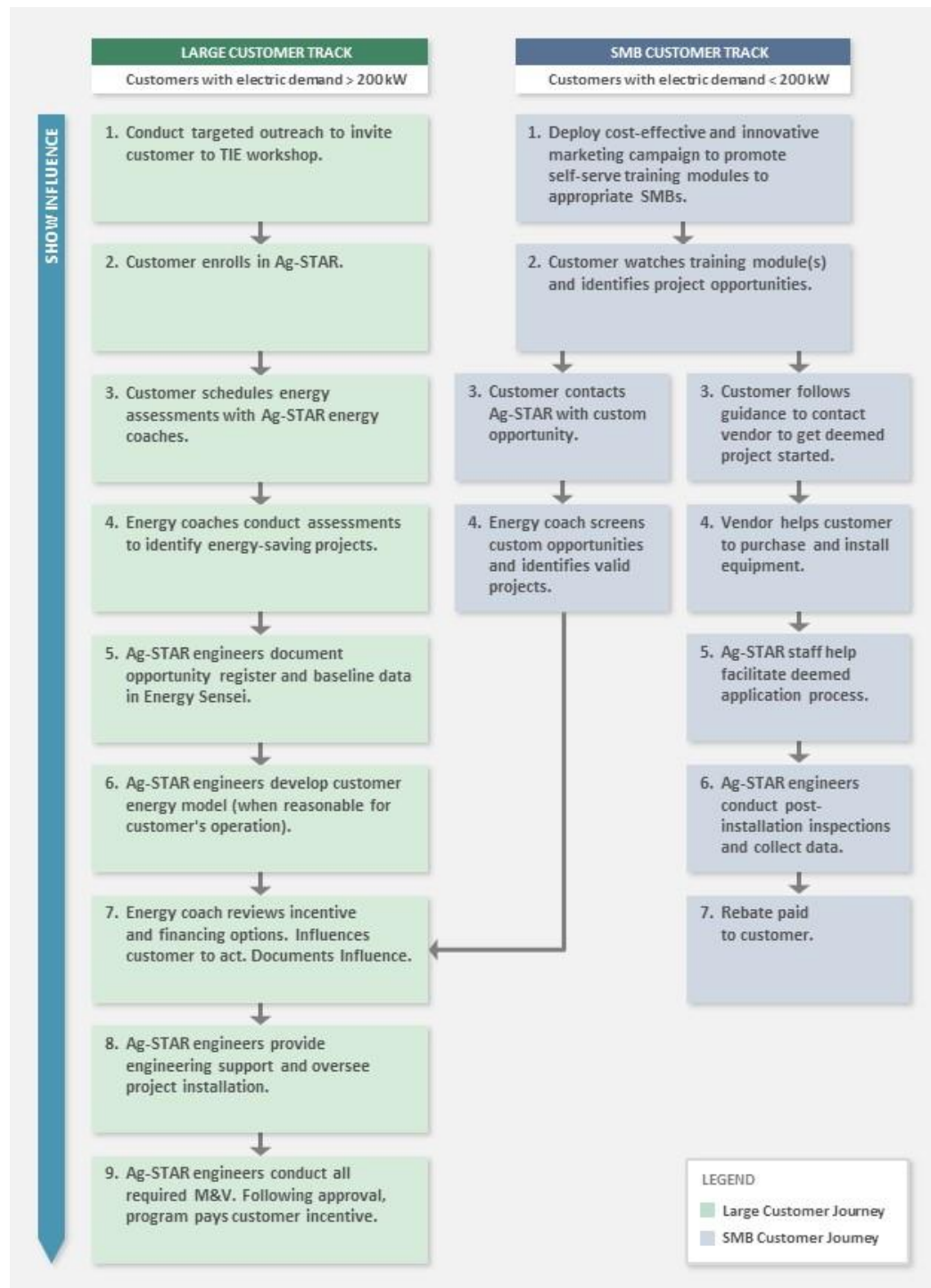


Figure 1 Ag-STAR Program Flow

SDG&E Ag-STAR (Savings, Training, Assistance, and Rebates)

Attachment 4 – Incentive Tables and Workpapers

10.6.2022

1 Incentive Structure

For custom and NMEC projects, Ag-STAR incentives are calculated as a function of electric and natural gas savings claims on a net lifecycle savings basis per CPUC guidance¹.

Table 1. Ag-STAR Base Incentive Levels

Incentive Tier	Project Type	Measurement Type	Measure Life (yrs)	Electric (\$/kWh)*	Gas (\$/therm)*	Incentive Cost Cap**
1	BRO (Operational, RCx)	NMEC or Custom	2-3+	\$0.04	\$0.20	None
2	Add-On Equipment/ Accelerated Replacement	Custom	4-10	\$0.15	\$1.00	75% of FMC
3	Normal Replacement/ Capacity Expansion	Custom	11-20	\$0.25	\$1.50	100% of IMC

*Base incentives for to-code custom projects are capped at 50% of those listed in Table 5.

**FMC = Full Measure Cost, IMC = Incremental Measure Cost

Incentive adders may also be available for deep and persistent energy savings and strong program participation including, but not limited to the following:

- Small/medium, hard to reach, and disadvantaged customers
- Comprehensive projects with bundled measures
- Prompt project completion
- Adoption of emerging technologies

The total incentive with adders for a project is limited to 150% of the base incentive (Table 1) not to exceed 100% of eligible project costs (ARC, FMC, IMC). Rebates for deemed measures are aligned with the expected custom incentives above and are consistent with SDG&E's measure catalog found at [2022 EEBR Product Catalog FINAL AG_05052022.pdf \(sdge.com\)](#).

Ag-STAR offers on-bill financing through SDG&E, coupled with incentives. On-Bill Financing can drive energy-efficiency projects that do not meet a customer's rate of return threshold with incentives or rebates alone, and the combination of OBF with incentives and rebates has the potential to accelerate projects with faster payback periods. Third party financing may also be available for eligible customers through a program partner.

¹ D.18-05-041, pp. 18-19 and 169-170 (Conclusion of Law 3)

SDG&E Ag-STAR (Savings, Training, Assistance, and Rebates)

Attachment 5 – Diagram of Program

10.6.2022

1 Diagram of Program

Figure 1 summarizes how Ag-STAR fits within SDG&E’s customer programs portfolio and the statewide energy efficiency landscape, including connections with marketing and outreach, workforce training, emerging technologies, and Integrated Demand Side Management (IDSMS) programs.

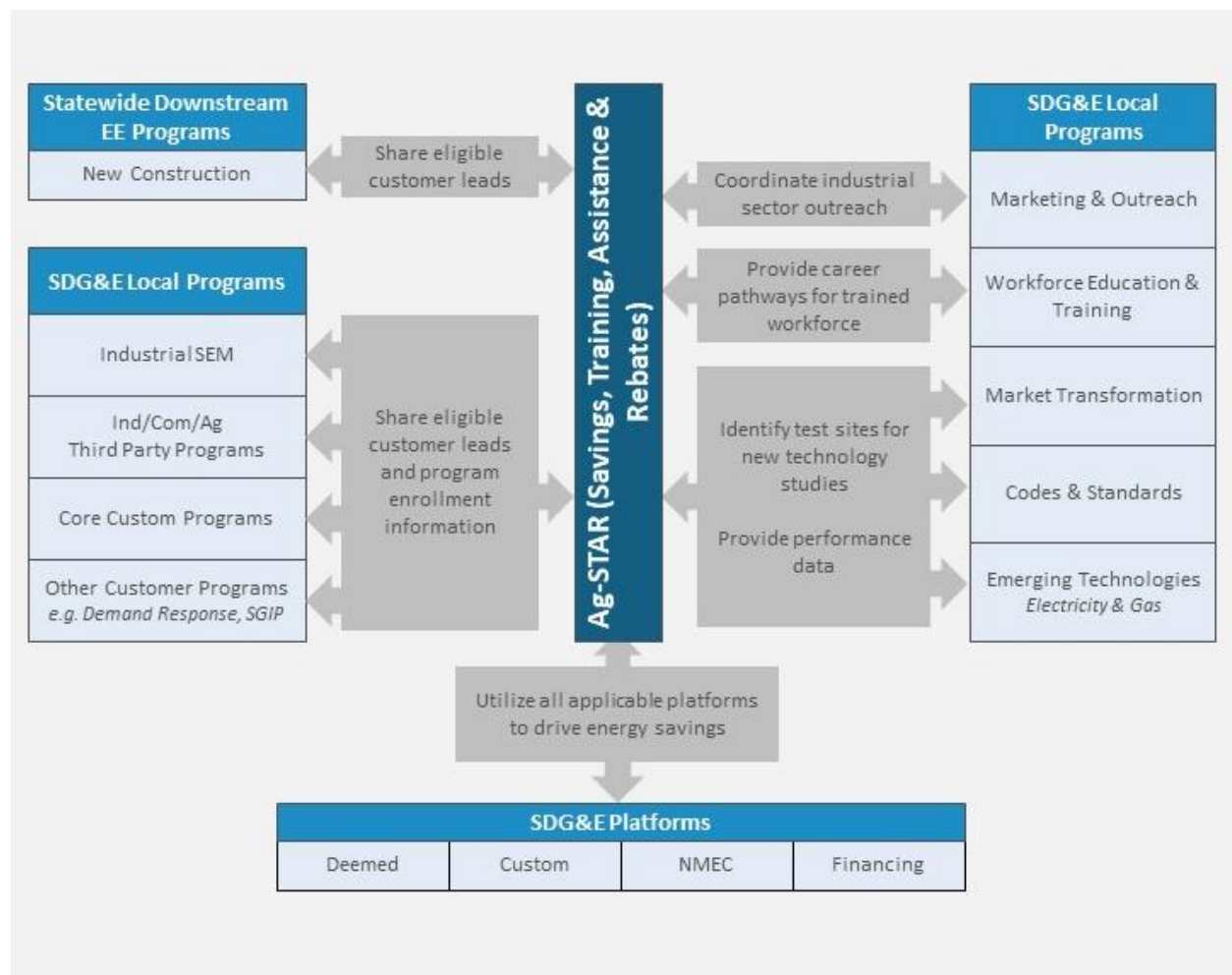


Figure 1 Diagram of Program for Ag-STAR

SDG&E Ag-STAR (Savings, Training, Assistance, and Rebates)

Attachment 6 – Evaluation, Measurement, & Verification
(EM&V)

10.6.2022

Table of Contents

1	Measurement and Verification (M&V) Plan	1
1.1	Deemed Platform	1
1.2	Custom Platform	1
1.3	Pre-Install	2
1.4	Post-Install	2
2	Normalized Metered Energy Consumption (NMEC)	3
2.1	Appropriateness of NMEC	3
2.2	NMEC Approach (Site-Level or Population-Level)	3
2.3	Eligible Customer Population	3
2.4	Strategies to Target High Savings	3
2.5	Analytical Methods and Tools	3
2.6	References for Analytical Approach	4
2.7	Implementation Examples for Analytical Approach	4
2.8	Key Data for Savings Calculations	5
2.9	Data Collection Plan	5
2.10	EUL Determination	5
2.11	Program Influence Methodology	5
2.12	Statistical Precision (Risk and Savings Uncertainty)	6
2.13	Identification of Non-Routine Events (NREs)	6
2.14	Rationale for savings <10%	7
2.15	Monitoring During Reporting Period	7
2.16	M&V Roles	7
2.17	Incentive Methodology and Compensation	7
2.18	Quality Assurance	7
2.19	Software Tools	8
2.20	To-Code Savings	8

1 Measurement and Verification (M&V) Plan

1.1 Deemed Platform

Cascade Energy, Inc. (Cascade) will make all applicable measures outlined in Attachment 1 – Policy and Procedures Manual available to Ag-STAR participants, as well as any other relevant measures that we identify during the negotiation and start-up phases. Our program design includes developing new workpapers and deemed measures as described in Section 2.4 of the Implementation Plan. We will incorporate these and other new measures when they become available but deemed savings claims will always be based on CPUC-approved workpapers.

To verify eligibility, our staff will review each application for completeness, accuracy, and alignment with specifications and requirements listed in applicable workpapers. Applicants submit a simple, intuitive, single-page rebate form, and our staff completes sections of the application upon customer request. This approach streamlines application processing and reduces the number of rejections and rework.

Depending on application volume, we will verify either all deemed projects or a statistically rigorous sample. Verifications will validate equipment and installation, ensure it is functioning as intended, document installations with photos, and confirm that equipment specifications match the incentive application. Verification will be conducted remotely when feasible, using processes that we have implemented for other utility programs. While we do not intend to measure savings from deemed projects, we will track data such as measure cost to inform future workpaper updates.

1.2 Custom Platform

The Cascade Team will embed M&V at the earliest stages of customer engagement by focusing on and documenting influence starting in the customer acquisition phase. The Ag-STAR program approach is designed to overcome real customer barriers to project implementation, laying a strong basis for attributable savings. Influence will be documented in the project application, which will help justify higher net-to gross (NTG) values, if applicable. Influence documentation will include:

Identification of any pre-planned projects and/or existing barriers to implementation, which will consider both leads from other programs as well as customers' internal efforts. Documentation of any previously identified projects, along with reasons implementation has not yet occurred. As we work through project justification, we document the influence Ag-STAR personnel brought to eliminate these project barriers.

Consideration of factors including Title 24 and documented Industry Standard Practice (ISP). We always ask customers the age of existing equipment for all potential projects other than new construction and document items like equipment nameplates with dates of manufacture. Our engineers are knowledgeable about the effective useful life (EUL) for equipment we commonly encounter and can

determine when equipment has reached the end of its useful life. If it has not, or if equipment is to-code or to-ISP (Industry Standard Practice), the project is an accelerated replacement and will have dual baselines. If equipment has reached the end of its useful life and has no code or ISP baseline, it will be treated as a normal replacement. All this information will be compiled and included as part of the project documentation submittal to SDG&E.

When necessary, Cascade will draw upon its years of ag-sector knowledge to create and document appropriate ISPs in line with SDG&E guidance.

Custom M&V verifies that the intended changes were made and measures/documents the resulting energy and demand savings. We will apply an appropriate level of M&V rigor to each project based on expected savings, available data, and certainty (or uncertainty) of savings. Project-level M&V plans will adhere to International Performance Measurement and Verification Protocol (IPMVP), CPUC, and SDG&E guidelines. The following lists broadly outline the M&V process for a typical project. We will develop detailed program-level M&V protocols during the program start-up phase.

1.3 Pre-Install

- Determine appropriate baseline.
- Determine IPMVP savings methodology (A, B, C, or D).
- Determine pre-install energy usage by measuring for an appropriate duration or estimating based on nameplate values. Also measure key energy drivers (temperature, production, etc.) as necessary based on savings methodology and measurement scope.
- Document and account for any non-routine events (NREs) in pre-install measurement period.
- Annualize pre-install measured data to an annual operating profile and calculate consumption.
- For a normal-replacement baseline, use engineering calculations to apply operating profile to appropriate baseline equipment and operations to obtain baseline energy profile.
- Document all project influence sources and screen out free riders.

1.4 Post-Install

- Verify Installation of equipment.
- Determine post-install energy use by measuring for appropriate duration or estimating based on nameplate values. Also measure key energy drivers determined in the pre-install phase.
- Document and account for any Non-Routine Events (NREs) in post-install measurement period.
- Validate similarity of pre- and post-install conditions and profile. Conduct additional data collection if pre-install and post-install measurements show substantially different operation.
- Calculate baseline and upgrade energy based on the post-install operating profile applied to baseline and upgrade equipment.
- Calculate energy savings as: $\text{Energy Savings} = \text{Baseline Energy} - \text{Upgrade Energy}$.

2 Normalized Metered Energy Consumption (NMEC)

Cascade follows a rigorous Normalized Metered Energy Consumption (NMEC) M&V approach that aligns with evolving statewide guidance, including CPUC's NMEC Rulebook. Our NMEC M&V plan will address criteria specified by the Rulebook as follows:

2.1 Appropriateness of NMEC

NMEC eligibility per the 2020 NMEC Rulebook includes "Site-level NMEC projects in industrial [ag] buildings are permissible, to the extent they are similar to one that would be carried out in a commercial building." Accordingly, Ag-STAR NMEC projects may be:

- Ag facilities that are more commercial/building like in terms of their operations and patterns of energy use, such as cold storage rooms, greenhouses, and indoor grow operations.
- Loads and processes in facilities that are substantially similar to those found in commercial buildings, such as lighting, space heating/cooling and water heating. For these projects, we will use submeter data as necessary to isolate eligible usage.

We hope that these limitations will evolve in the future, further expanding opportunities for ag facilities to achieve NMEC savings. We will modify our program approach if that happens; until then, we intend to work with SDG&E reviewers and statewide precedents to establish commonly understood eligibility space within the above building-type loads.

2.2 NMEC Approach (Site-Level or Population-Level)

Ag-STAR will use a Site-Level NMEC approach.

2.3 Eligible Customer Population

As described above, eligibility will be governed by the NMEC Rulebook. Commercial and commercial-like loads within the ag-sector umbrella will be eligible.

2.4 Strategies to Target High Savings

Pre-screening will assess the project's ability to exceed 10% savings. Ag-STAR's training and coaching strategies will help customers identify and implement comprehensive projects. Our engineers and technicians typically identify and work with customers to implement more than 10-20 distinct measures per project.

2.5 Analytical Methods and Tools

Ag-STAR will manage development and documentation of regression model and savings quantification within Excel. Spreadsheets will use industry standards for multivariate linear regression analyses, such as

Microsoft Excel's 'linest' function. Completed models will be loaded into Energy Sensei to streamline data management, performance monitoring, and progress visualization. In compliance with SDG&E open-source expectations, Energy Sensei licenses will be provided to any reviewer needing access.

Baseline and performance period models will be developed to account for the energy usage of each facility. Model selection is not always simply based on the best statistics; a model is selected based on a combination of model statistics, ease of data acquisition, physical conditions at the site, and what makes intuitive sense to the facility operators.

Energy savings within the project boundary will be calculated using a model based on performance period data under normalized conditions. Performance period models will use the same modeling approach as was used for the baseline model development. Energy savings within the project boundary will be calculated by applying the following equation:

Energy Savings = Normalized Baseline Period Energy Use – Normalized Performance Period Energy Use

Where:

- Normalized Baseline Period Energy Use = energy consumption calculated using the Baseline Model and normalized data for each independent variable. Normalized weather data will use a Typical Meteorological Year (TMY) dataset, which aligns with the applicable CPUC-approved Avoided Cost Calculator (CALEE 2018 TMY dataset for the nearest weather station).
- Normalized Performance Period Energy Use = energy consumption calculated for the performance period using the performance period model, adjusted for non-routine events as necessary.

Models will be developed using an Excel-based workbook template, which streamlines the process of testing candidate variables for statistical significance and comparing and documenting performance of hypothesis models. Once a model is selected, it will be loaded into Cascade's Energy Sensei software to facilitate customer communication, sharing, and ongoing tracking.

2.6 References for Analytical Approach

Cascade's analytical approach follows CPUC, Lawrence Berkely National Labs (LBNL), American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), and IPMVP guidance.

2.7 Implementation Examples for Analytical Approach

Cascade's analytical approach has been refined through usage in their existing programs including those of SDG&E, SoCalGas, and SCE, plus NMEC projects within PG&E ISOP.

2.8 Key Data for Savings Calculations

Most models will use daily data for all dependent and independent variables. Data will vary for each project. Daily or weekly SDG&E usage data will typically serve as the dependent variable, though in some cases, submeter data may be used instead. Independent variables may include, but will not be limited to:

- Ambient temperature: Energy Sensei downloads site-specific dry-bulb and wet-bulb data through a third-party service that aggregates data from multiple NOAA sources.
- Facility schedules: Ag-STAR coaches will confirm customer operating schedules with respect to weekends, holidays, and/or seasonal operations.
- Occupancy or production: In some cases, occupancy or production data may be obtained from a customer system of record for use in an NMEC model. Examples could be number of workers on-site, daily product shipments, or tons of raw material/equivalent inputs.

2.9 Data Collection Plan

All data will be uploaded and managed in Energy Sensei. Project-specific Data Collection Plans will be provided in all NMEC Project Applications. Data collection methods and Quality Assurance/Quality Control (QA/QC) checks will be customized based on the predicted uncertainty. For example, projects with predictable buildings using reliable utility meter data may require savings progress to be checked every three to six months. Projects with customer-owned meters, potential non-routine events, and uncertain upfront savings estimates may need to check savings progress each month.

2.10 EUL Determination

A weighted average EUL will be calculated by adding together the product of each measure's EUL multiplied by its expected savings and dividing by the total expected savings. The forecast weighted average for all recommended measures will be included in the Project Application based on forecast savings, and the updated weighted average EUL for the measures actually installed and verified will be included in the Final Savings Report. Ag-STAR's budget and savings estimates conservatively assume a three-year EUL for all NMEC savings which would be applicable to operational and retro-commissioning measures.

2.11 Program Influence Methodology

Ag-STAR will use an NTG ratio of 0.95 for all NMEC projects per CPUC Resolution E-4952. Only projects which have been actively influenced by Ag-STAR will be eligible for savings claims and incentives; facilities with significant changes in operations or normal maintenance of existing equipment during the baseline or reporting periods may not be eligible, or calculation methodologies may have to be developed to isolate and back out corresponding apparent savings. Project influence will be clearly documented for all projects. The following factors may be relevant to the influence demonstration: project developer's engagement and communications with the customer, the customer's decision-

making criteria, the project timeline, how the project was initiated, how the measure was identified, the alternative viable options that also meet the customer's needs, and the energy and non-energy benefits. Documentation, with time stamps if applicable, may include marketing materials, training workshop attendance, self-serve video attendance, audits or site visit results, savings or financial calculations shown to customers, email correspondence, meeting minutes, customer internal policies or investment criteria, and/or relevant internal customer communications.

2.12 Statistical Precision (Risk and Savings Uncertainty)

Consistent with California regulatory precedent, all Ag-STAR NMEC claims will meet a Fractional Savings Uncertainty (FSU) standard of within 50% uncertainty at 90% confidence. This is consistent with all other NMEC programs Cascade is implementing in California and a higher standard than ASHRAE guidance specifies (50% uncertainty at 68% confidence).

Cascade's M&V protocols on projects with meter-based savings have been employed for over a decade in various programs throughout the country. Cascade also allows for some savings risk when we develop annual program forecasts from NMEC projects. In addition, we constantly monitor savings progress on NMEC projects through Energy Sensei dashboards, giving us enough advance notice to intervene and analyze in case savings trends are not in line with expectations. Above all, in the event that projects do not yield expected savings, Cascade will focus on meeting the planned program goal by identifying more projects both NMEC and non-NMEC (deemed, custom calculated BRO, and capital projects) depending on the level of shortfall and the time period in which the shortfall needs to be addressed.

2.13 Identification of Non-Routine Events (NREs)

Possible NREs will be identified through continuous monitoring of performance data as well as regular project check-ins with the customer. All NREs will be documented in the project M&V Report. Standard thresholds will apply for identification of significant NREs and for possible updates to regression models, ensuring that directionality is not biased specifically toward positive or negative adjustments.

Baseline data shall also be analyzed to determine the presence of unusual energy use patterns that may be caused by NREs. All suspected NREs should be confirmed with the participant. Confirmed baseline period NREs must be documented in the pre-screening report, with a clear description of how their impacts will be addressed.

During the performance period, the most common method to identify NREs is through visual inspection of the metered energy use data. Time-series charts of energy use data may be used to identify shifts in energy use patterns that may be caused by NREs. If energy use data begins trending significantly outside expected values as determined by the model, an NRE may be present. Ag-STAR staff's professional judgement will be used to identify NREs, but a situation in which an independent variable departs its baseline mean by $\pm 3\sigma$ will serve as a flag of a potential NRE.

2.14 Rationale for savings <10%

Ag-STAR is not targeting projects with savings less than 10%, but we do not believe a hard eligibility line is appropriate. Use of interval data and advanced modeling methods means that even if fewer measures are installed or if they are not functioning as intended, savings at or below 5% may still be determined with reasonable accuracy and confidence. In the event of projects with less than 10% savings, we will use the FSU methodology listed above to ensure savings claims are statistically meaningful. Site-specific methodologies will be described in project-level M&V plans submitted with Project Applications.

2.15 Monitoring During Reporting Period

Data monitoring will include the collection of data for each dependent and independent variable used in the baseline model. SDG&E usage data will be imported directly into Energy Sensei if possible. Other data will be obtained from customers and reviewed regularly by Cascade staff to identify quality issues or potential non-routine events.

2.16 M&V Roles

All M&V roles, including data management, model development, and performance analysis, will be completed by Cascade staff. Cascade already has a deep bench of M&V expertise from our longtime leadership in program implementation.

2.17 Incentive Methodology and Compensation

Ag-STAR NMEC financial incentives will be calculated per the incentive rates specified in the Implementation Plan. Incentives will be based on final energy savings as determined during the performance period and verified by the Savings Report. Accordingly, customer incentives will be paid in a single payment following M&V completion.

2.18 Quality Assurance

The following QA and QC steps will be taken to ensure savings estimates are dependable and replicable:

1. Periodic review of data with sites to ensure energy usage is as expected
2. Measure verifications based on site visit documentation
3. Periodic tracking of energy savings progress (visually available with Energy Sensei)
4. Quality checks will be used to assess data integrity at multiple stages. These will include checks on data gaps, repeated data, and common logic. Information collection and documentation with reports will be checked to ensure that appropriate project data is being entered, used, and tracked. Cascade will typically ensure QC is done by a team member that was not involved in the project to ensure fresh eyes are assessing the information and procedures utilized.

2.19 Software Tools

Models will be developed using an Excel-based workbook template, which streamlines the process of testing candidate variables for statistical significance and comparing and documenting performance of hypothesis models. Once a model is selected, it will be loaded into Cascade Energy's Energy Sensei software platform, which streamlines the process of data management and performance tracking, while providing other customer-facing services. All hypothesis model variants, input and output data, resulting model coefficients, and model metrics will be documented and available for review, and reviewers will be provided access to Energy Sensei if desired.

2.20 To-Code Savings

All NMEC measures, including to-code projects, will use an existing conditions baseline. Savings estimates will not separately quantify or differentiate incentives for to-code and above-code portions of savings. Ag-STAR will focus on helping customers improve energy performance from a unique starting point. While most Ag-STAR measures will fall outside of clear code applicability, in some cases "To Standard Practice" measures may be identified and included in projects. Sometimes straightforward upgrades go uncaptured indefinitely at some ag sites due to barriers, such as a customer's lack of energy efficiency knowledge and the cost of implementing energy-saving projects. If to-code or to-ISP measures are identified and implemented, the project application will assess the operability (or probability of repair) of existing equipment and document program influence.