Business Plan

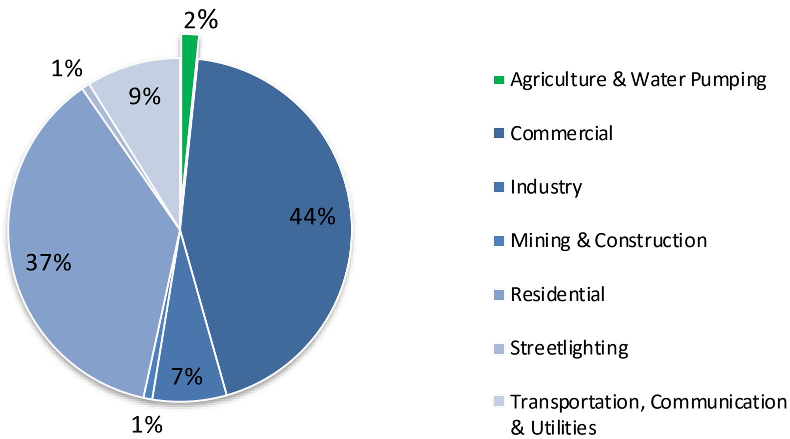
Agricultural Chapter

Stage 2

Contents

Market Characterization

SDG&E Electric Consumption by California Energy Commission (CEC) Sectors

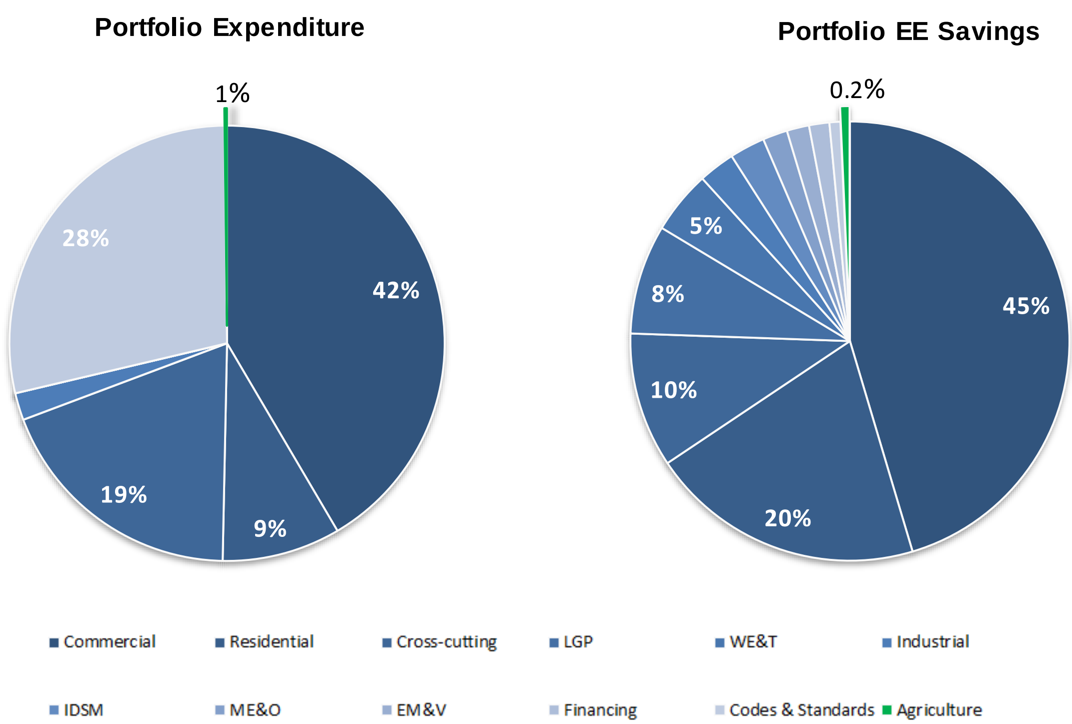


Source: CEC - Kavalec et al., 2013. California Energy Demand 2014-2024

Key Observation:

- In the 2013-2015 Program Cycle, 2% of the electric consumption within SDG&E's service territory came from the Agricultural Sector. This represents 1,060 GWh compared to the total of 63,755 GWh between 2013 and 2015.

Portfolio Spending and Savings

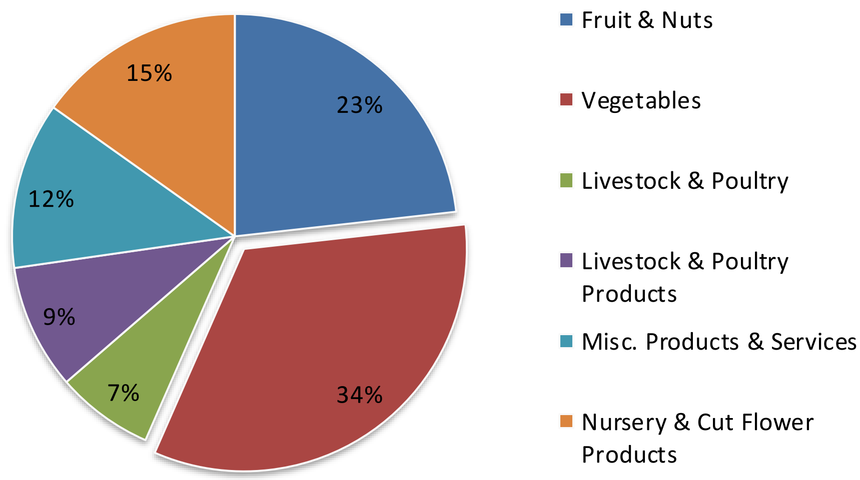


Source: EEStats Dec 2015 Monthly Report, Final numbers to be reconciled by May 2016

Key Observation:

- In the 2013-2015 Program Cycle, 1% ($1.8M) of all EE spending was spent on Agricultural projects while 0.2% (1.2 GWh) of the portfolio savings came from the agricultural sector.

Agricultural Account Distribution



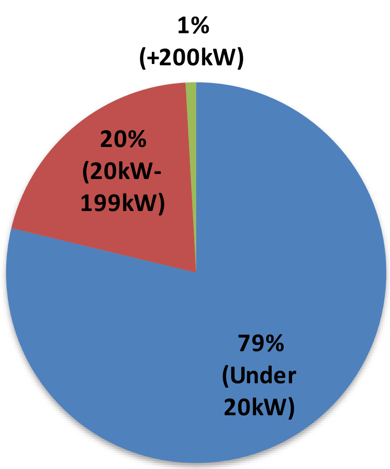
Source: SDG&E (2013-2015)

Key Observations:

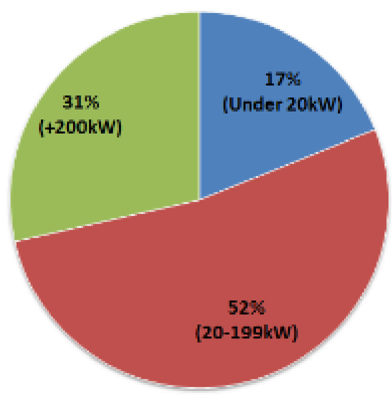
- Most agricultural accounts belong to the vegetable growers segment

Agricultural Customer Size

Agriculture Accounts by Demand Size



Agriculture Consumption by Demand Size

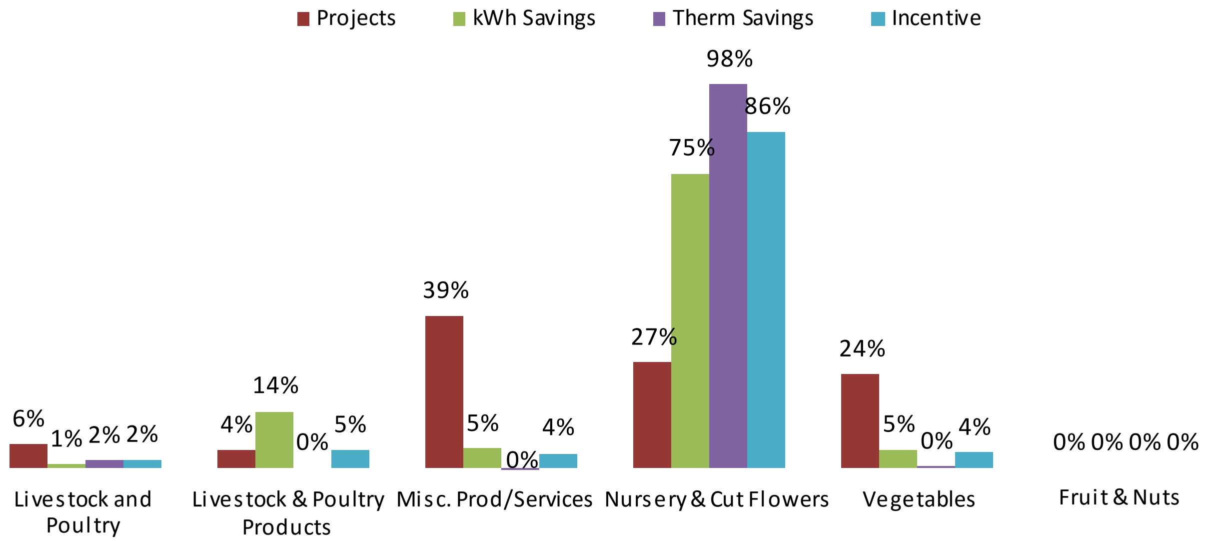


Source: SDG&E (2013-2015)

Key observation:

- Most agricultural accounts are small-sized accounts under 20kW

Historical Energy Efficiency Projects

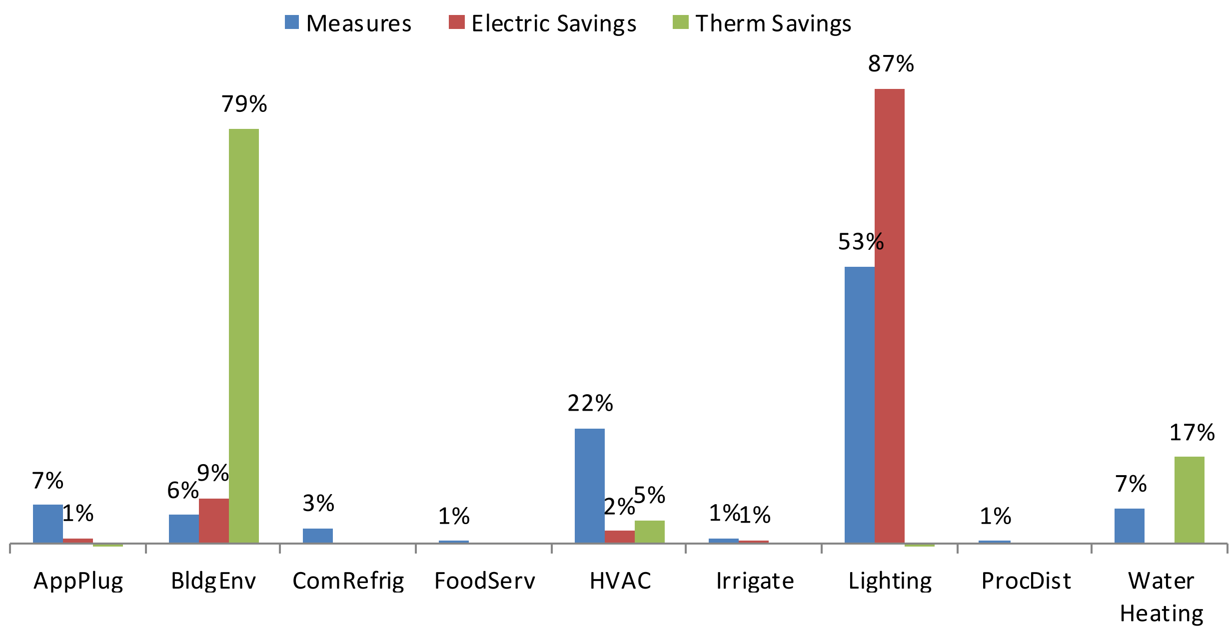


Source: SDG&E (2013-2015)

Key observations:

- Majority of the historical EE projects took place in the Nursery & Cut Flowers segment

Historical Savings by End Use



Source: SDG&E (2013-2015)

Key observations:

- Lighting brought in high historical electric savings
- Building envelope brought in high historical therm savings

SDG&E Vision

San Diego Gas & Electric, in collaboration with key stakeholders, will create the foundation for an innovative, connected and sustainable energy future.

SDG&E Agricultural Energy Efficiency Mission

SDG&E's mission for the agricultural sector is to cultivate the relationship with the agricultural community and support the economic and environmental success of the sector in achieving California's Long Term Strategic goals.

SDG&E's Agricultural Energy Efficiency Role

- SGD&E seeks to drive market transformation by generating customer demand for Energy Efficiency. The resulting energy savings will be more integrated and comprehensive.
- Extend our trusted energy advisor role to agricultural customers; SDG&E has extensive local knowledge of our grid, our customers' needs, and their energy consumption patterns.
- SDG&E will utilize decades of administration experience to change the way customers look at energy improvement and connect customers to local resources.
- SDG&E is uniquely positioned to work with various stakeholders[1] to continue to achieve California's significant energy reduction goals.
- SDG&E will explore new services and innovative approaches to motivate and enable customers to achieve economic benefits through Energy Efficiency, resulting in the achievement of California's long term Energy Efficiency strategic plan goals.

[1] Stakeholders include, but are not limited to: state agencies, specifically California Public Utilities Commission and California Energy Commission (CEC), manufacturers, distributors, contractors, Investor Owned Utilities, Program administrators, Energy Efficiency program implementers, capital providers and customers.

Problem Statement - Strategy Matrix

Category/Strategy		Sector Nuances	Competing Priorities	Financial Considerations
Energy Tools	Financing Offers		X	X
	Emerging Technology	X	X	
	Workforce Education & Training		X	X
Simple Offerings	Integrated Offerings		X	X
	Third-party/ Upstream/Mid-stream model	X		X
Access to Assistance	Targeted Stakeholder Engagement		X	
	Targeted Marketing	X		

Problem Statements

Problem Statement 1: Agricultural Sector nuances have not historically aligned with program offerings

The Agricultural sector within the SDG&E territory has historically been characterized as one segment, growers. Further analysis of agricultural accounts show a wide variety of segments such as: livestock and poultry, livestock and poultry products, and miscellaneous products and services that include industries like apiculture, cattle feedlots, and aquaculture. In addition to the historical lack of granularity when characterizing this sector, some accounts that should be classified as agricultural are actually classified as residential. Because of all of these factors, program offerings have not accurately addressed the needs of the sector.

Observations

NAICS code classifications

Processing of projects and reporting of project locations have historically been based on NAICS codes. NAICS codes provide a high-level indication of the agricultural business type, but it does not accurately capture the operations and production.

"While the NAICS code may have accurately described the operation's primary function, this code does not capture the diversity of end-uses and technologies of vertically-integrated farming operations."

-Market Characterization Report, Navigant

Residential vs. Agricultural accounts

Smaller agricultural operations could take place at locations with multiple functions. Any agricultural activities that occur at accounts listed as residential are not categorized and reported as agricultural. The residential accounts are missed Energy Efficiency opportunities.

"While a grower's local utility may designate a tariff to be "Agriculture," an individual grower's meter may also read his or her family activities. Growers' descriptions of their operations may not capture these nuances. However, utilities should be aware that a single operation could involve any number of activities and could be accounted for in numerous agricultural programs."

-Market Characterization Report, Navigant

Problem Statement 2: Competing Priorities

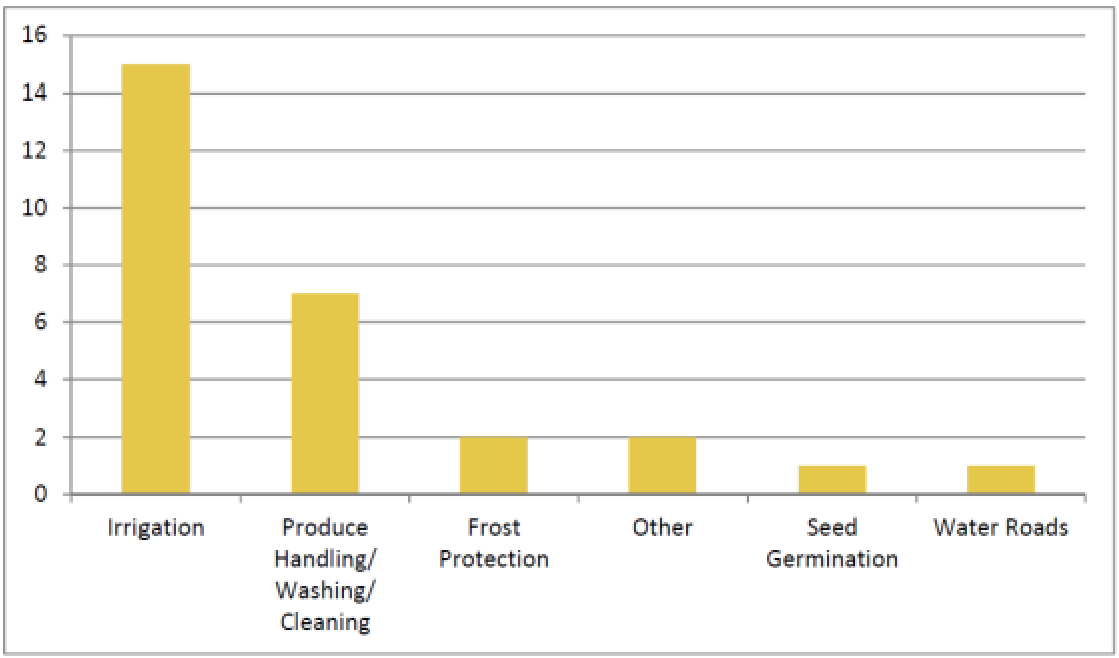
Most Agricultural customers within the SDG&E territory prioritize business decisions based on their day-to-day operations. These decisions are often to support their most significant resources for production, water and labor. Along with these resources come barriers related to regulations and scarcity of resources.

Observations

Water Usage

Most of agricultural production is heavily reliant on water. Irrigation systems and water pumping are the most intensely used equipment in day-to-day operations, primarily in segments such as nursery and cut flower products, and fruit, nut, and vegetable growers. With recent regulations surrounding the drought, the shortage of water compounded with the increasing rates of water is a growing concern for most agricultural customers; where money is already a persistent concern. The figure below shows the typical usage of water.

"Money and Water related savings were identified as higher priorities than energy savings"
-SDG&E Agricultural Sector Market Study, Evergreen Economics



Source: *Market Characterization Report, Navigant*

Labor cost and availability

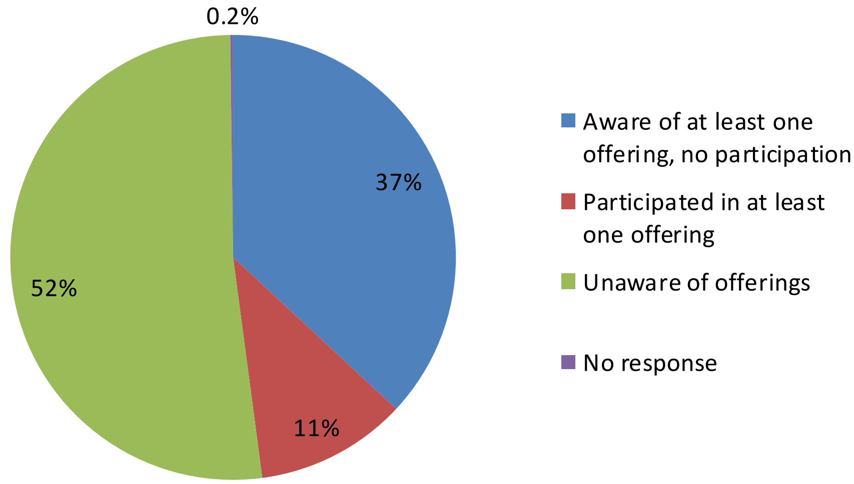
A growing development within the agricultural sector is the increasing cost or even the availability of employees. Much of the daily tasks are dependent on manual processes that require a large staff. The increasing costs of supporting a staff in an industry where money is already a concern has provided an opportunity for potentially automating systems.

"Increased labor cost, or decreased labor availability, will affect the viability of each segment. For some (Post-Harvest Processing, Mushrooms, Greenhouses & Nurseries and Refrigerated Warehouses in particular) this may lead to increased mechanization. While automated watering and handling systems would relieve growers and operators of the need for some employees, this transition will add to the electric load of this sector over the next decade."

- Market Characterization Report, Navigant

Lack of information and awareness

Most agricultural customers are unaware of SDG&E's Energy Efficiency offerings. A portion of agricultural customers show some interest in Energy Efficiency but because of their limited knowledge of the topic, they have done very little to pursue Energy Efficiency projects. In addition, customers do not seek information on saving energy from SDG&E. Respondents in the *2015 SDG&E Agricultural Sector Market Study* explained that they are likely to received their information on how to save energy from industry organizations, suppliers and colleagues as compared to an SDG&E contact or website. The figure below shows the distribution of awareness of Energy Efficiency offerings.



Source: *SDG&E Agricultural Sector Market Study, Evergreen Economics*

Property ownership

The *2015 SDG&E Agricultural Sector Market Study,* conducted by Evergreen Economics, indicated that property ownership was a barrier in participating in Energy Efficiency programs. For those agricultural businesses who lease the property where production takes place, any type of upgrade is of very little concern; their main concern is remaining in business.

Problem Statement 3: Financial Considerations

Most agricultural customers are reluctant to pursue any projects outside of their usual operations because of the financial costs. Even customers who recognize the value of Energy Efficiency, and are willing to initiate an Energy Efficiency project, may still not be able to do it because of their lack of capital resources.

Observations

Financial stability is a constant concern for many growers in the agriculture sector. The primary focus for these customers is the day-to-day operations. Decisions that could benefit in the long term, like Energy Efficiency projects, are not top-of-mind for them because it is not tangible to the current state of their business.

"The primary barrier for agricultural customers across all sectors is first cost of the equipment. In both the MASI interviews and in the Market Characterization, growers consistently cited financial constraints as a reason for not installing higher-efficiency equipment. Even owners of large farms express concerns with staying in business, and must be resourceful in their use of measures such as soil moisture sensors."
-Measure, Application, Segment, Industry (MASI): Agriculture, Navigant

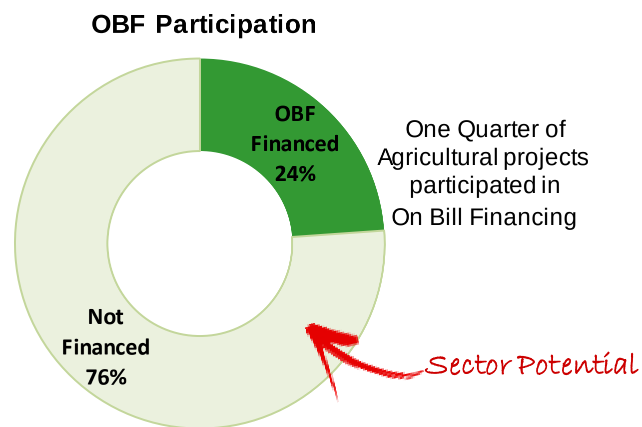
Strategies

Category 1: Energy Tools

Finance Offerings

"Because of the importance of the agricultural market to California's economy, and because of the tenuous financial situation of many agricultural operations, utility incentives can provide some financial relief to growers who are otherwise unable to install efficient equipment."
-Measure, Application, Segment, Industry (MASI): Agriculture, Navigant

Lack of capital for energy efficiency investment is a known challenge for most small and mid-sized agricultural businesses. This problem is especially prominent in SDG&E's service territory, where about 80% of SDG&E's agricultural customers are small in size (i.e. less than 20kW). SDG&E's On-Bill Financing Program has been able to assist a large number of customers to overcome their financial challenges by providing a zero-percent interest loan. Since the program's inception, over $48 million were loaned out to over 1,400 businesses. The integration of On-Bill Financing Program and the Direct Install Program (i.e. Business Energy Solutions Program) in July 2015 begun to assist small and mid-sized customers by providing a seamless customer experience from energy audit to financing to installation. SDG&E shall continue to offer these successful financing programs in the future. The anticipated financing pilots such as On-Bill Repayment Program will assist customers who do not qualify for On-Bill Financing.



From 2013-2015, only 1% of the loans funded through OBF were from the Agricultural sector and the total loan amount for this sector was about 0.6% of the total loans

"On-bill financing programs are a promising way for utilities to help their customers invest in energy efficiency improvements, such as upgrading to a high-efficiency air conditioner or adding insulation. These improvements can deliver valuable efficiency to the utility, reduce customers' energy expenses, improve the value of properties, create jobs, and reduce harmful pollution."
-NRDC Issue Brief, July 2013

Emerging Technology

Emerging Technology Department should utilize pilot programs to test new technologies to tackle high potential segments and end uses. Once proven to be cost-effective, such new technologies can be offered through various energy efficiency programs to increase savings from the segments and end uses with high energy consumption. The introduction of new technologies to the targeted industries and the ability for them to try them first hand will be keys to increasing adoption rate of such technologies.

Since water and labor are major priorities for agricultural customers, one piece of technology to explore is load-shifting technology that automates irrigation systems.

"Respondents from several sectors indicated interest in adopting mechanization to offset labor costs. Many factors would affect the selection of automation technology and the rate of any such adoption. CA utilities could influence the technology selection by conduction research proactively to identify the most energy efficient options and provide this information to growers and vendors."
- Market Characterization Report, Navigant

Category 2: Simple Offerings

Integrated offerings

Given the multifunctional nature of agricultural premises, most growers would be more willing to implement Energy Efficiency projects if offerings were more comprehensive and integrated. This includes offerings that incorporate one of their top priorities, water. SDG&E will seek to prioritize Energy Efficiency and water savings by partnering with local agencies and identifying water-energy nexus offerings and developing education and training.

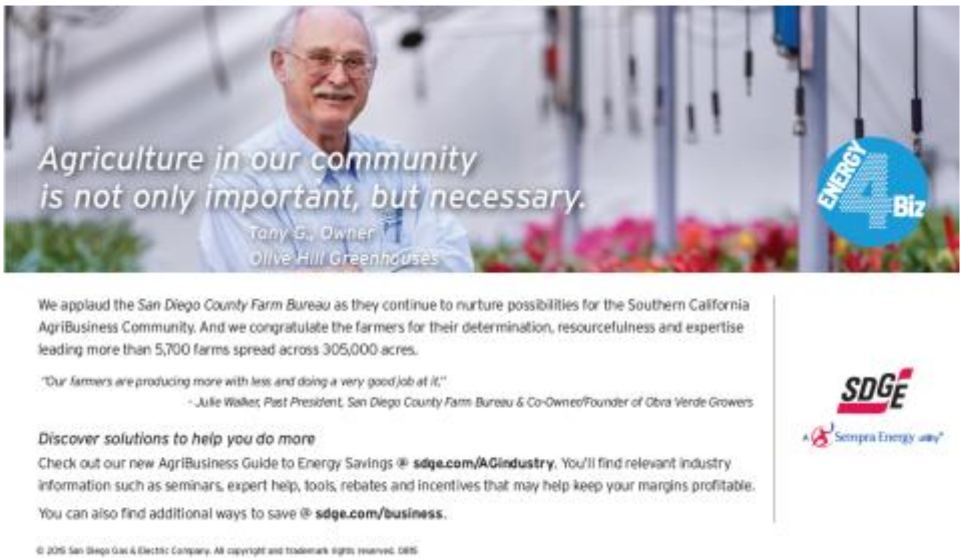
"Growers would be much more amenable to a consolidated set of incentives and outreach that addresses orchard operations, repair shop consumption, and any on-site, post-harvest processing, as well as residential energy use, than separate offerings from multiple representatives. Utilities should promote a full range of measures to this segment, as part of an integrated program rather than focus solely on irrigation and refrigeration measures."
- Market Characterization Report, Navigant

Growers frequently work closely with suppliers when purchasing equipment; because of this relationship, growers turn to suppliers to find out about the latest and greatest in the industry. To leverage this current relationship, SDG&E will explore third party, and mid and upstream approaches utilizing industry experts.

"Crop-producing customers report that they would be a lot more likely to participate in SDG&E's offerings if there was the ability to get incentives at the supplier level."
-SDG&E Agricultural Sector Market Study, Evergreen Economics

Category 3: Access to Assistance

In the 2015 SDG&E Agricultural Sector Market Study, Evergreen Economics asked respondents, “Where do you look for information about how to save energy?” Most respondents stated that they receive their information from industry organizations, suppliers and colleagues when compared to an SDG&E contact or website. This information indicates that the relationships within the sector are most impactful and that there is value in leveraging the networks that already exist. SDG&E has begun to implement this strategy by developing marketing pieces using influential members of the community to help drive participation in this sector.



Additionally, SDG&E’s agricultural sector lead works directly with relevant Trade Associations to communicate Energy Efficiency messaging, practices, and offerings. SDG&E will continue to foster existing relationships while also identifying current thought leaders and influencers in the Agricultural sector. This collaboration will have a mutual benefit – we will further understand the complexity of each segment within this sector, and we will work with these leaders and develop education around the value proposition of Energy Efficiency projects. The goal of this partnership is to create momentum and case studies to promote Energy Efficiency adoption.

Metrics

Category	Baseline (2016)	Near-term (Decision-2021)	Mid-term* (2022-2024)	Long-term* (2025-2027)
Energy Tools	Establish current customer utilization of existing energy tools such as OBF, WE&T, etc. (e.g. X% utilization) Identify requirements for new energy tools	Comprehensiveness of projects utilizing energy tools vs. those that did not (e.g. X% of energy tool projects are comprehensive and Y% of non-energy tool projects are comprehensive) New energy tools (technology/system) implemented	A % increase in comprehensive projects utilizing energy tools New energy tools (technology/system) optimized	A % increase in comprehensive projects utilizing energy tools Track activities in new energy tools
Integrated Offerings	Establish participation baseline	Incremental increase in participation by X%	Incremental increase in participation in targeted high usage areas by X%	Incremental increase in participation in targeted high usage areas by X%
Access to Assistance	Establish baseline on "ease of participation score" (e.g. X% of customers think programs are easy to understand, easy to enroll, etc.)	A % increase in "ease of participation score". This metric should positively correlate with the one above.	A % increase in "ease of participation score". This metric should positively correlate with the one above.	A % increase in "ease of participation score". This metric should positively correlate with the one above.

*Mid-term and long-term metrics contingent upon near-term results

Key Partners

- Utilities (IOU's)
- Water Agencies
- Industry Organizations (e.g. Farm Bureau, San Diego Flower and Plant Association)
- Landlords (Building Owners)
- Suppliers, Distributors, Trade Professionals