# SoCalREN

## WO ESS 2007

# Final Agricultural Study

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# Executive Summary

This study provides SoCalREN with market information about the rural hard-to-reach (HTR) businesses in the agricultural sector to support the implementation of the SoCalREN Agricultural Rural-HTR Direct Install (Ag-DI) program. Ag-DI is an equity program focusing on providing no and low-cost energy efficiency to farms within Disadvantaged Communities (DAC) or agricultural businesses that are HTR. (HTR businesses must be in a rural or DAC area and either be small or lease.)

For the first time, starting in 2024, SoCalREN will offer energy efficiency services to customers in the agricultural sector. Working together as a suite of five programs, SoCalREN will provide market support (through a workforce education and training program and a project development program), financing (through a financing program specifically for Rural-HTR customers), and energy efficiency equipment (through a resource acquisition program and an equity segment direct install program). While the focus of this study is the Ag-DI program, we expect that information about the targeted audience will be used by the project development program (Ag-PDP) and that barriers and other programs available to agricultural customers described herein will apply to the resource acquisition program (Ag-Retrofit) as well as the Ag-DI program.

Based on a small number of in-depth interviews with California Small Farm Advisors and broad use of secondary data (e.g., USDA National Agricultural Statistics Service, past reports), we provide information about the targeted audience as well as barriers they face, programs available to these customers and historic uptake of energy efficiency for measures expected to be part of the Ag-DI program to help inform the future program. At the end of the report, we combine all findings to provide program design considerations for the 2024 programs.

**The Targeted Audience** – There are from ~2,300 to ~5,500 HTR or DAC farms within the territory that may be able to benefit from the SoCalREN Ag-DI program. The low end of the targeted audience range (~2,300) includes farms in rural or DAC ZIP codes that are not considered HTR as they are not leased and have higher sales (i.e., more than $50,000 since these farms are more likely to have the ability to participate in a program) while the upper end of the range (i.e., the HTR) includes leased farms and those with sales less than $50,000.

SoCalREN's target of 731 farmers (from the Business Plan) is a high percentage of the 5,500 HTR or DAC farms.

Expanding the program to include any small farm (regardless of DAC or rural ZIP code) increases the target population for the Ag-DI program by another 6,000 farms to a total of ~11,500 farms.

**Barriers to Participation** – Farmers face several barriers when seeking to include energy efficiency options:

- Upfront financial constraints, coupled with lack of understanding and trust around savings from energy efficient equipment dissuades farmers from upgrading equipment. Small farms operate on high risk and low profit margins. Additionally, some areas may have higher financial barriers next year. The 2023 spring rains caused over 100,000 acres of farmland in Tulare and Kings County to be impacted by floodwater. These farms will be financially stressed, and the programs will need to be sensitive to this issue when approaching customers. At the same time, it could be an opportunity to help customers affected by the flooding with no-cost equipment.
- Land tenure (i.e., owning vs leasing) can affect eligibility for loans and state grant programs and influence decisions on adopting long-term conservation practices as farmers who rent face challenges with leases not renewing.
- Language can be a barrier as information on farming practices, programs, marketing, and regulations tend to be in English while Small Farm Advisors indicate that the majority of the people they work with speak limited or no English.
- Lack of internet access on farms ranges from 16% in San Luis Obispo County to 22% in Tulare County. As such, some farmers may have limited access to information shared online or via e-email related to energy efficiency upgrades.
- Engagement of farmers from groups whose members have been subject to racial, ethnic, or gender discrimination is less likely within traditional agricultural industry groups or in public meetings. As a

result, these farmers are often not receiving important information, and their voices are not always included in decisions about policies that affect their farm businesses

**Historic Uptake of EE Measures** - Historical information from the two IOU programs (totaling ~$250,000 per year in spending) that provided deemed measures over the past five years show very low uptake of the measures planned by the Ag-DI program (less than 250 measures claimed in total). These programs likely appealed to larger farms. The non-resource support offered by SoCalREN may be required to encourage participation by DAC Ag customers. Additionally, SoCalREN's investment in this sector (i.e., the 2024 budget of $1.16 million) will also be much larger than the ~$250,000 per year spent by the IOUs historically, which can help overcome the barriers noted above.

**Energy Efficiency Services Available to Rural-HTR farmers** – In 2024, rural-HTR farmers will have energy efficiency services available from SoCalREN, SCE, and SoCalGas. There is redundancy in some of the program elements. All the program administrators offer energy efficiency measures, audits and technical assistance. All also target at least some DAC and HTR (with SCE proposing an Equity program for small and medium agricultural customers but as of July 2023 we have not seen anything concrete about this program). The SoCalREN and SCE programs will both offer direct install (and the SoCalGas program may or may not offer direct install), albeit for different measures.

Outside of these three programs, the state offers grant programs through the California Department of Food and Agriculture (CDFA) and the California Energy Commission. Financial assistance is available for energy efficiency from the Natural Resources Conservation Service and the United States Department of Agriculture. The US Department of Agriculture and the Farm Service Agency also provide financial assistance for repairing damage to farmlands caused by natural disasters and to help put in place methods for water conservation during severe drought. State and federal programs such as these generally have specific timelines to put in applications and may need relatively sophisticated knowledge to obtain a grant or require matching funds.

However, the combined incentives and non-resource offerings under SoCalREN's Ag-PDP, Ag-Financing, and workforce development may provide the additional support that is needed to reach HTR and DAC farms and move them to energy efficient installations.

**SoCalREN Implementation Considerations –** Based on the findings in our report, SoCalREN's suite of agricultural programs will provide the financial and non-financial resources to help farmers overcome known barriers. However, SoCalREN may need to 1) ensure that the outreach is clear and offered in multiple languages, 2) engage new outreach partners such as USDA County Farm Service Agencies to better connect to the targeted group, 3) adjust application processes to accommodate those without internet access, and 4) re-evaluate incentives after a year to ensure that the available finances are driving installations.

The remainder of the report provides:

- Study Overview
- SoCalREN and Overview of Their Agricultural Programs
- Study Findings
- Ag-DI Program Design Considerations based on Findings

# Study Overview

This study provides SoCalREN with market information about the rural hard-to-reach (rural-HTR)[1] businesses in the agricultural sector for the area covered by SoCalREN. The focus of this study is on the HTR agricultural businesses (farms) to support SoCalREN as they implement their 2024 Agricultural Equity direct install program. This study may also support implementation of other SoCalREN agricultural programs that are included in the resource acquisition or market support segments (described further in the next section).

**Objectives and Research Questions:**

This study provides information that SoCalREN can use to make decisions for future program implementation of proposed agricultural sector programs. There are two specific objectives for this study, each with multiple research questions.

Objective #1: Enable SoCalREN to target the Agricultural Rural-HTR Direct Install program (Ag-DI) towards specific audiences that can benefit from SoCalREN services

1. Who are rural-HTR Ag customers and where are they located?
2. What do we know about rural-HTR agricultural customers' needs and the barriers they face to installing energy efficient equipment?

Objective #2: Inform the Ag-DI program design by providing relevant context

3. What is the list of all energy efficiency related services currently available to rural-HTR agricultural businesses (both within and outside of ratepayer funded programs)?
4. What has been the uptake by past agricultural participants (of any size) of efficiency measures the Ag DI program expects to provide?

**Data Sources**

The evaluation team conducted primary and secondary data collection to inform this study. For our primary data collection, the evaluation team interviewed three Small Farm Advisors and Community Educators that were part of the University of California Agriculture and Natural Resources organization to help understand customer needs and barriers. These Small Farm Advisors and Community Educators are located in various California counties as part of University of California Cooperative Extension and conduct research and interact with farmers directly. We spoke with 1 advisor and 2 educators who serve Fresno, Riverside, and San Bernardino counties.[2]

Table 1 describes our secondary data sources. See Appendix A for a complete list of sources.

**Table 1. Study Secondary Data Sources and Research Questions Addressed**

| Source | Description | Research Questions Addressed | | | |
|---|---|---|---|---|---|
| | | Customer Characterization - Rural-HTR Ag | Customers' Needs and Barriers | EE Services Available | Past uptake of EE measures |
| **California Department of Food and Agriculture (CDFA), California Agricultural Statistics Review 2020-2021.** | Details California agricultural commodities by county, dollar values, acreage, seasonality, and year and over year trends. | X | | | |

[1] Most agricultural businesses are located in rural areas but there are urban farms in counties such as Orange and Los Angeles County.

[2] While Fresno County was not part of the counties included in the secondary data analysis, we believe that the barriers and challenges faced by farmers in Fresno County are applicable to other counties.

| Source | Description | Research Questions Addressed | | | |
|---|---|---|---|---|---|
| | | Customer Characterization - Rural-HTR Ag | Customers' Needs and Barriers | EE Services Available | Past uptake of EE measures |
| **USDA National Agricultural Statistics Service (NASS), 2017*** | USDA conducts the NASS Census every five years, covering data on farm operations, land use, operator characteristics, production practices, income, and expenditures. | X | X | | |
| **Disadvantaged Communities (DAC) and rural ZIP Codes** | We used Cal Enviro Screen V. 3 to identify DAC ZIP codes and the USDA Primary RUCA Codes (code=10) to identify rural ZIP codes for analyzing NASS ZIP code-level data. | X | | | |
| **SoCalREN list of DAC and HTR ZIP codes** | ZIP codes highlighting which are DAC and which are HTR | X | | | |
| **2020 American Community Survey** | Information on languages spoken by county | X | | | |
| **Energy efficiency programs research and evaluation** | We reviewed agricultural energy efficiency program research and evaluation reports from 2000-2020. | | X | X | |
| **California Energy Data and Reporting System (CEDARS)** | Claimed savings for historic programs; program implementation plans | | | X | X |
| **2024-2027 Business Plans** | Proposed programs; implementation plans | | | X | |

**The NASS Census counts any operation, even small plots of land, growing fruit, vegetables, or some food animals if $1,000 or more of such products were raised and sold during the Census year.*

### Study Focus by County

The Team focused the research on specific counties to enable digging into relevant details. Beginning in the counties included in the two regions described in the SoCalREN business plan (San Joaquin Valley and Central Coast), the Team considered the number of farms within a county as well as the leading commodities in those counties (i.e., the agricultural products) and how those products may use the measures expected to be offered by the Ag-DI program.

Of the 13 SoCalREN counties, farmers that could benefit from the Ag-DI program are mainly in seven (7). One of the seven, Riverside, is outside of the San Joaquin Valley or Central Coast regions but has a large number of farms. Additionally, nurseries are a leading commodity in Riverside and nurseries can use the greenhouse measures that the program will offer. (Table 2 below shows the which counties were included or excluded from our analysis and Table 17 in Attachment 2 includes details on commodities and number of farms by county).

**Table 2. SoCalREN Counties in/out of the Target Audience Analysis**

| Region | SoCalREN Counties in Target Audience Analysis | Counties Excluded from Target Audience Analysis (and why excluded) |
|---|---|---|
| **San Joaquin Valley** | Kern<br>Kings<br>Tulare | Mono (<50 farms and none in DAC, leading commodities do not require deemed measures)<br>Inyo (<100 farms and none in DAC, leading commodities generally do not require deemed measures) |
| **Central Coast** | Santa Barbara | None |

| Region | SoCalREN Counties in Target Audience Analysis | Counties Excluded from Target Audience Analysis (and why excluded) |
|---|---|---|
| | San Luis Obispo<br>Ventura | |
| **SoCalREN outside of regions noted above** | Riverside | Imperial (<260 farms in DAC, leading commodities often do not require deemed measures)<br>Los Angeles (size of farms is generally under 10 acres)<br>San Bernardino (leading commodities often do not require deemed measures)<br>Orange (<200 farms in DAC) |

*Source: NASS data*

As shown above, Mono, Inyo, and Imperial counties were excluded from our analysis because of a small number of farms in the county (and no DAC farms) and the leading commodities do not appear to require the measures offered by the program. Los Angeles county was excluded due to the small farm size, San Bernardino was excluded due to leading commodities and Orange County was excluded due to the low number of farms.

**Study Limitations**

A key source of data on the number of farms and farmer and producer characteristics is the USDA National Agricultural Statistics Service (NASS) Census. The USDA conducts the Census every five years. At the time of this research, the USDA was still collecting data for the 2022 Census with an expected release date in late 2023. Consequently, the data cited in this report are from 2017.

Where possible, we reference NASS Census data at the ZIP code level, but some of the data elements are only available at the County-level which does not allow us to look at specific DAC or rural ZIP codes within each county.

# SoCalREN and Overview of Their Agricultural Programs

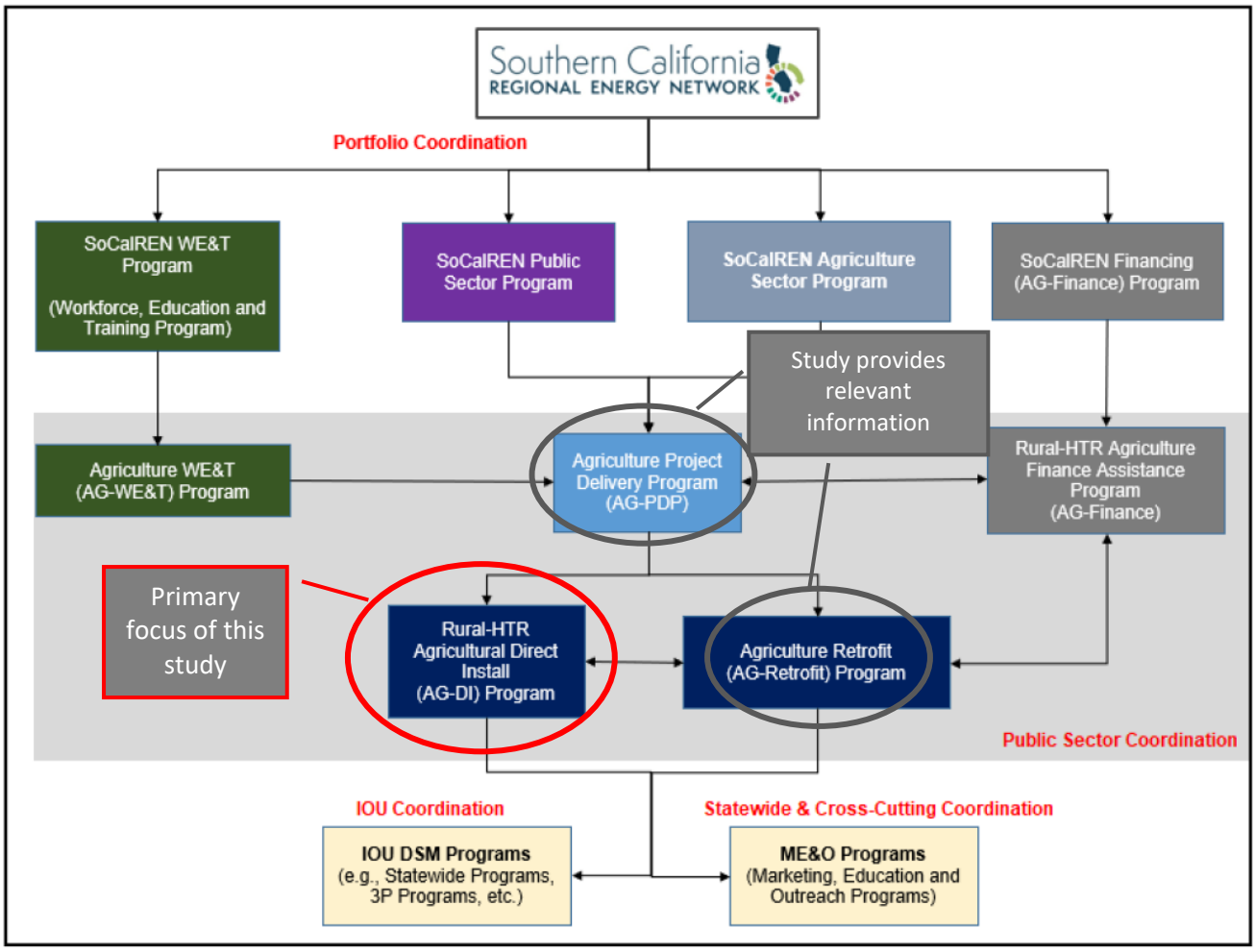
SoCalREN provides energy efficiency services to all or part of 13 southern California counties. According to their 2024-2027 Business Plan, "SoCalREN includes approximately 16,000 individual agriculture customers responsible for 25 percent of all food consumed in the United States and are a key part of California's economy. Nearly 70 percent of farms in the region are under 50 acres, and only 10 percent are larger than 500 acres. Many of these farms are considered Socially Disadvantaged under the Farmer Equity Act of 2017.The majority of SoCalREN's agricultural base is in the San Joaquin Valley, including Tulare, Kern, and Kings counties. Other counties with a large agricultural customer base are Riverside and Ventura counties."

The recent CPUC decision (D.23-06-055, June 29, 2023) approved the five programs SoCalREN plans to implement to serve the agricultural customers in their area.

1. **Agricultural Direct Install-No Cost (Ag-DI)** – installation of no and low-cost energy efficiency deemed measures (i.e., measures with workpapers that estimate a set savings value)
    a. The focus of this study
    b. Includes five different deemed measure groups specific to the agricultural sector
2. **Agricultural Retrofit-Incentive (Ag-Retrofit)** – rebates for any measure applicable to the agricultural sector. The Ag-Retrofit program will offer deemed or custom measures as well as application of a normalized metered energy consumption approach.
3. **Agricultural Project Delivery Program (Ag-PDP)** – identification of needs, technical support, and handholding customers through the energy efficiency projects. Ag-PDP will funnel appropriate customers into the Ag-Retrofit and Ag-DI programs. The SoCalREN programs may serve a single customer, depending on their needs.
4. **Agricultural Finance (Ag-Finance)** – additional funds for rural-HTR customers to implement energy efficiency projects
5. **Agricultural Workforce Education & Training (Ag-WE&T)** – build and train a diverse trade ally network of qualified Agricultural service providers to sell energy efficiency products

The graphic in Figure 1 shows the relationship of these programs.

**Figure 1. SoCalREN Agricultural Suite of Programs**




*Source: SoCalREN Business Plan Filing, Exhibit 4. Ag-PDP Program Implementation Plan (Figure 1 in that document) plus additional text boxes included by the evaluation team.*

According to the implementation plans included in the Business Plans, SoCalREN's suite of agricultural programs has a goal of reaching 731 DAC customers within the Ag sector over a three-year period (2024-2027). While the target is for DAC customers, the target refers to customers participating in any Ag program offered by SoCalREN, not just the Ag-DI program. The Ag-DI program (the focus of this study and circled in the figure above) is an Equity segment program that will concentrate on farming operations that defined as hard-to-reach (HTR) or in Disadvantaged Communities (DACs). Specifically, the program will focus on farmers that:

- Are located in Rural or DAC location[3]

A hard-to-reach (HTR) customer must also have at least one of the following characteristics:

- Primary language spoken is other than English
- Have less than 25 employees
- Have demand less than 20KW or gas use less than 10,000 therms annually
- Lease or rent

Additionally, the Ag-DI program has a special emphasis on customers in communities designated as underserved. To ensure that Equity segment programs remain appropriately focused on underserved customers,

[3] For SoCalREN, rural is defined as any location outside of the US Office of Management and Budget Combined Statistical Areas of the Greater Los Angeles Area. DAC is any business located within the top 25% of disadvantaged census tracts using version 3.0 of the California EPA CalEnviro Screening Tool.

the CPUC indicated in D.23-06-055 that a customer must be a member of an underserved community and must also be an "underserved business group" as defined by Government Code Section 12100.63(h)(2) for the California Small Business Development Technical Assistance Program, i.e., women-, minority-, and veteran-owned businesses, and businesses in low-wealth, rural, and disaster-impacted communities included in a state or federal emergency declaration or proclamation.[4]

The Ag-DI program will provide no-cost and low-cost installations of electric energy efficiency deemed measures as well as technical assistance and some level of education. Based on implementation plans within the Business Plan application, the Ag-DI program will offer measures within five different groups. (Table 3). We note that these are not necessarily low-cost items often included in other energy efficiency program (e.g., faucets aerators) suggesting that the program may have to cover a larger portion of the cost.

**Table 3. Measures Offered in SoCalREN Ag-DI and Ag-Retrofit Programs and Types of Agricultural Customers who use the Measures**

| Measure Groups | Typical customer using the Ag-DI offered measures |
|---|---|
| **Booster Pump Overhaul/VSD** | Growers of outdoor crops |
| **Evapotranspiration Monitoring and Optimization** | Growers of outdoor crops |
| **Green Houses and Indoor Ag heating** | Growers of indoor cannabis, vegetables, ornamental plants; raising poultry |
| **Lighting (Indoor Ag or Outdoor Area)** | Any |
| **Well Pump Overhaul / VSD** | Growers of outdoor crops |

*Source: SoCalREN Ag DI implementation Plan and the Team's subjective assessment of typical customer use of measures*

[4] Page 47 of D.23-06-055.

# Study Findings

DAC/HTR farm operations have significant barriers to participating in energy efficiency programs. Over the last several years agricultural customers (of any type, not just DAC/HTR) have not taken advantage of historic IOU programs with the deemed measures that will be offered by the SoCalREN Ag-DI program. However, DAC/HTR farm operations appear to be the most in need of help – and that help may need to be extensive to enable participation. The 2024 budgets are significantly higher than in previous years which should provide opportunities for extensive outreach and support that may have been previously lacking.

The following sections, with information grouped by each of the four research questions, provide more detailed information that supports these overall findings.

## Who are the Rural-HTR Ag Customers and Where are They Located?

In the next sections, we provide details on:

- the number of farms in DAC or rural locations,
- the number in farms DAC or rural who lease, and
- the number of farms in DAC or rural with farm sales greater or less than $50,000.
- Following these details, we bring all this information together to estimate a range of farmers.

We also provide some information on languages prevalent in the counties under review and the number of women owned farms.

*Note on the Data:* Our data better supports understanding the number of farms for Rural or DAC geographic areas versus HTR. There is little data available to enable the evaluation team to determine a HTR customer. NASS provides whether the farm is leased, which when combined with DAC or Rural ZIP codes, provides one estimate of HTR farmers. For our analysis, we consider farm sales a rough proxy for the combined HTR criteria of few employees or low energy demand. We provide some information on languages and women owned farms by county (i.e., for a broader geographic area than rural or DAC).

Note that throughout this section, we order the county data from high to low based on the far right column in each table.

### Farms in DAC or rural locations

Nearly 40% of farms in the seven counties are in DACs, i.e., approximately 5,500 farms. While San Luis Obispo and Santa Barbara Counties have no farms in DAC ZIP codes, each has a small number of farms in rural ZIP codes. Tulare County has the greatest number of farms overall, but Kings County has the highest percentage in DAC or Rural ZIP codes. (Table 4)

**Table 4. Number of DAC and Rural Farms by County**

| County | Number of Farms in County | Number of Farms in DAC ZIP Codes | Number of Farms in Rural (not DAC) ZIP Codes | Total Number of Farms in Rural or DAC ZIP Codes | % of Farms in DAC or Rural ZIP Codes |
|---|---|---|---|---|---|
| **Tulare County** | 3,534 | 2,690 | 105 | 2,795 | 79% |
| **Kern County** | 1,614 | 823 | 97 | 920 | 57% |
| **Kings County** | 1,526 | 818 | 35 | 853 | 56% |
| **Riverside County** | 2,413 | 730 | 49 | 779 | 32% |
| **Ventura County** | 2,114 | 125 | 0 | 125 | 6% |
| **Santa Barbara County** | 1,251 | 0 | 15 | 15 | 1% |
| **San Luis Obispo County** | 2,256 | 0 | 7 | 7 | 0% |
| **Total** | 14,708 | 5,186 | 308 | 5,494 | 37% |

*Source: 2017 USDA NASS, SoCalREN list of ZIP codes*

The leading commodities (i.e., agricultural products) within the three counties with the highest number of farms in Rural or DAC ZIP codes (Tulare, Kern, and Kings) are crops that need irrigation (e.g., almonds, grapes, etc.). Since irrigation requires pumps, these farms have a high likelihood of being open to the well and booster pump measures the SoCalREN programs offer.

## Leasing in DAC or Rural

Understanding if a farm is leased is important as it decreases the likelihood of the farmer wanting to spend funds on energy efficiency products that would stay with the farm after their lease is up (e.g., pump VFDs that are part of the Ag-DI program). ). Some counties may have higher opportunities as there are fewer farmers that lease. For example, Kings County has 92% of the farms that are not leased (slightly less than 800 owned farms that are in a rural or DAC ZIP code).

About 9% of all farms in DAC or Rural ZIP codes in the focus counties are leased, with the proportions ranging from 0% in San Luis Obispo County to 22% in Ventura County. Tulare has the greatest number of leased farms in DAC and rural ZIP codes, though this represents only 7% of the total farms. (Table 5)

**Table 5. Number of Farms that are Leased by County and ZIP Code Status**

*(leased farms less likely to participate in EE program)*

| County | Number of Farms in DAC or Rural ZIPs | DAC: Number of Leased Farms | Rural (not DAC): Number of Leased Farms | Total Leased Farms | % of County Farms in DAC or Rural ZIP Codes that are Leased |
|---|---|---|---|---|---|
| **Ventura County** | 125 | 27 | 0 | 27 | 22% |
| **Kern County** | 920 | 109 | 14 | 123 | 13% |
| **Riverside County** | 779 | 92 | 4 | 96 | 12% |
| **Kings County** | 853 | 60 | 7 | 67 | 8% |
| **Santa Barbara County** | 15 | 0 | 1 | 1 | 7% |
| **Tulare County** | 2,795 | 190 | 3 | 193 | 7% |
| **San Luis Obispo County** | 7 | 0 | 0 | 0 | 0% |
| **Total** | 5,494 | 478 | 29 | 507 | 9% |

*Source: 2017 USDA NASS, SoCalREN list of ZIP codes*

If the assumption holds true (of farmers who lease not wanting to participate in an energy efficiency program), given our data, this reduces the potential farms population for Ag-DI program by 9% (to ~5,000 farms total).

## Farm Sales (proxy for size)

Information on sales provides a sense of the potential ability of a farming operation to have the ready cash for any energy efficiency products for which they have to pay and is our proxy for whether the farm has fewer than 25 employees or has a low energy demand. Those with less sales are most likely less able to participate in an energy efficiency program where they need to use cash and thus may be even more likely to need support from a direct installation program that is no-cost.

Among farms in DAC or Rural ZIP codes, about half have sales less than $50,000, ranging from 41% in Kings County to 86% in San Luis Obispo County. (Table 6)

**Table 6. Number of Farms with Sales <$50,000**

*(farms with low sales less likely to participate in EE program)*

| County | Number of Farms in DAC or Rural ZIPs | DAC: Farms with Sales Less than $50,000 | Rural (not DAC): Farms with Sales Less than $50,000 | Total | % of county Farms in DAC or Rural ZIP Codes with Sales <$50K |
|---|---|---|---|---|---|
| **San Luis Obispo County** | 7 | 0 | 6 | 6 | 86% |

| County | Number of Farms in DAC or Rural ZIPs | DAC: Farms with Sales Less than $50,000 | Rural (not DAC): Farms with Sales Less than $50,000 | Total | % of county Farms in DAC or Rural ZIP Codes with Sales <$50K |
|---|---|---|---|---|---|
| **Santa Barbara County** | 15 | 0 | 12 | 12 | 80% |
| **Riverside County** | 779 | 545 | 37 | 582 | 75% |
| **Tulare County** | 2,795 | 1,228 | 80 | 1,308 | 47% |
| **Ventura County** | 125 | 56 | 0 | 56 | 45% |
| **Kings County** | 853 | 358 | 5 | 363 | 43% |
| **Kern County** | 920 | 297 | 78 | 375 | 41% |
| **Total** | 5,494 | 2,484 | 218 | 2,702 | 49% |

*Source: 2017 USDA NASS, SoCalREN list of ZIP codes*

## Range of Number of Farms by County

When considering all the above data, there are from ~2,300 to ~5,500 farms within rural or DAC ZIP codes that may be able to benefit from the SoCalREN Ag-DI program. The NASS data does not allow analysis to drill down to farms that are both leased and with fewer than $50,000 in sales. However, the data enables us to estimate a range of farms that may be interested in the Ag-DI program – a value that is about half of all farms within DAC or Rural ZIP codes. (Table 7)

**Table 7. Range of Number of Farms by County**

| County | **Highest Estimate** *(Number of Farms in Rural or DAC ZIP Codes)* | *Removing the number of farms that are leased* | *Removing the number of farms with sales less than $50,000* | **Lowest Estimate** *Farms with sales >$50,000 that are not leased* |
|---|---|---|---|---|
| **Tulare County** | 2,795 | 193 | 1,308 | 1,294 |
| **Kern County** | 920 | 123 | 375 | 422 |
| **Kings County** | 853 | 67 | 363 | 423 |
| **Riverside County** | 779 | 96 | 582 | 101 |
| **Ventura County** | 125 | 27 | 56 | 42 |
| **Santa Barbara County** | 15 | 1 | 12 | 2 |
| **San Luis Obispo County** | 7 | 0 | 6 | 1 |
| **Total** | 5,494 | 507 | 2,702 | 2,285 |

*Source: 2017 USDA NASS, Evaluation team analysis*

Later in the report (Table 11), we indicate that the IOU and SoCalREN agricultural programs have targets of ~1,400 DAC customers over a three-year period, which is a high percentage of the number of farms in DAC noted above (~5,500). Additionally, we note that our discussion with the small farm advisors indicates that many small farms are leased (which is different than the 9% of leased farms that we found in the NASS data) which may mean an estimate of farms with sales over $50,000 and not leased that is even lower than shown in the far-right column of the table.

If SoCalREN were to expand their target population, though, to small farms regardless of whether that farm is in a rural or DAC ZIP code, it would add another 6,024 farms, with another 1,000 each in San Luis Obispo, Riverside, and Ventura counties. (Table 8)

**Table 8. Number of Small Farms by County**

| County | Number of Farms in County | Number of Farms with Sales <$50K (small farms) | Number of Farms in DAC or HTR with Sales <$50K (small farms) | Additional Number of Farms with Sales <$50K |
|---|---|---|---|---|
| **San Luis Obispo County** | 2,263 | 1,640 | 6 | 1,634 |
| **Riverside County** | 2,462 | 1,951 | 582 | 1,369 |
| **Ventura County** | 2,114 | 1,283 | 56 | 1,227 |
| **Santa Barbara County** | 1,266 | 755 | 12 | 743 |
| **Tulare County** | 3,639 | 1,923 | 1,308 | 615 |
| **Kern County** | 1,711 | 795 | 375 | 420 |
| **Kings County** | 1,561 | 379 | 363 | 16 |
| **Total** | **15,016** | **8,726** | **2,702** | **6,024** |

## Languages Spoken by Farmers in Focus Counties

The NASS does not provide information about the languages spoken by farmers, but we wanted to bring in some level of information since it is a criterion for determining HTR.

We have two sources of data to understand languages spoken by farmers. The 2020 American Community Survey (ACS) and our discussions with Small Farm Advisors.

- We analyzed the language data from the 2020 American Community Survey because the USDA NASS does not publish data about preferred languages of farmers. Our ACS data covers households in the seven counties in our analysis. As such this information may not precisely reflect the language preferences of farming business owners as farming may be more prevalent as a business enterprise among some cultural and language groups than others.
- The Small Farm Advisors only provided specific languages they were aware of being spoken by the farmers with whom they interact, and the farmers were not always within the counties that are the focus of this study.

As such, the Small Farm Advisors bring in data that is directly relevant to farmers, while the ACS is data on the entire population in the counties.

Across all seven counties, in rural and DAC ZIP codes, 13% to 17% of households are limited English-speaking households.[5] Among those households, more than 90% of the households report speaking Spanish, followed by Asian-Pacific Island languages (6% to 10%).[6] However, some farms may have at least one person who is relatively fluent in English to interact with those with whom they seek to sell their product.

We looked at detailed language data by county and also noted in which languages the Small Farm Advisors offer services (see Table 9). Based on these sources, languages spoken in the seven counties (and languages where the program may want to have in-language materials) are Spanish, Tagalog, Chinese, Vietnamese, Korean, Punjabi, and Hmong.

[5] This is a US Census designation for households with no member 14 years and over who speaks English "very well".
[6] At the ZIP code tabulation area-level, data are only available on categories of languages, not specific languages. The categories are Spanish, Other Indo-European languages, Asian-Pacific Island languages, and Other languages.

**Table 9. Non-English Languages Spoken by Data Source – all households not just farmers**

| Language | ACS *(% of all households with a member speaking this language within the 7 Focus Counties)* | Small Farm Advisors *(farmers speaking this language)* |
|---|---|---|
| **Spanish** | 32% | X |
| **Tagalog** | 1.4% | |
| **Chinese** | 0.8% | X |
| **Hindi** | 0.7% | |
| **Arabic** | 0.5% | |
| **Vietnamese** | 0.4% | X |
| **Korean** | 0.3% | X |
| **Punjabi** | 0.3% | X |
| **Hmong** | 0.1% | X |

*Source: ACS and Small Farm Advisor interviews*

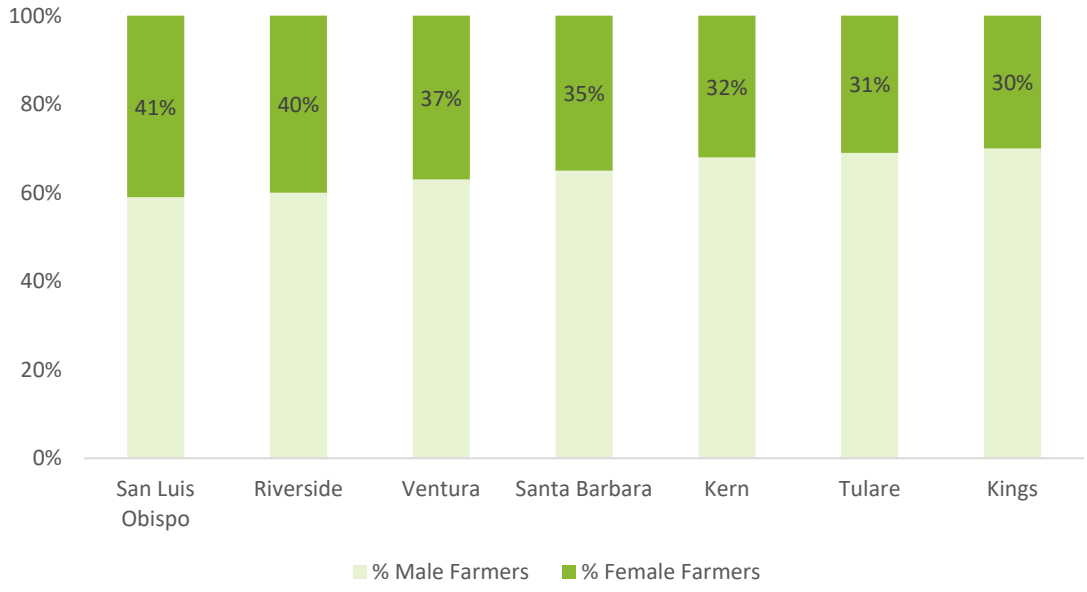
Outreach in Spanish is likely needed. However, given the multiple languages potentially spoken by farmers that the program wants to reach, the program may want to set a process in place to be able to quickly provide content in other languages such as Hmong, Vietnamese or Punjabi.

## Underserved Business Groups

As noted above, the Ag-DI program has a special emphasis on customers in "underserved business groups" which includes women-, minority-, and veteran-owned businesses, and businesses in low-wealth, rural, and disaster-impacted communities included in a state or federal emergency declaration or proclamation.

The NASS data provides information at the county-level on how farmers identify themselves, including gender. While we cannot drill down to DAC or rural ZIP codes, we can see that across the focus counties, the percentage of farmers who identify as female ranges from 30% in Kings County to 41% in San Luis Obispo County, suggesting that a large fractions of the targeted farms will be farms owned by women (Figure 2).

**Figure 2. Percentage of Farmers Identifying as Male or Female by County**

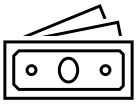



*Source: NASS*

Veteran-owned businesses are more limited. According to NASS, 14% to 20% of the farmers in each county have reported having military service.

## What are Barriers facing Farming Operations for Energy Efficiency Installations?

In this section we synthesize findings from our review of agricultural energy efficiency program research evaluation reports and conversations with Small Farm Advisors and Community Educators to describe agricultural customers' needs and barriers to energy efficiency. We expect that these barriers will exist within the customers that the Ag-PDP, Ag-Retrofit, or Ag-DI programs are seeking to serve.



**Finances**: Upfront financial constraints, coupled with lack of understanding and trust around savings from energy efficient equipment dissuades farmers from upgrading equipment. Some small- to medium-sized irrigated agriculture growers believe their systems are not consuming enough electricity to warrant expensive, energy saving equipment or are not aware that equipment exists (Navigant 2013, 2015). Additionally, many growers tend to repair equipment for as long as possible before replacing it (Navigant, 2015). Growers are juggling many operating costs, including water, labor, land rental fees, and supplies. Growers' views on the burden of water costs and the benefits of water-saving equipment may shift depending on current economic conditions and other costs.

Furthermore, as described by Small Farm Advisors and Community Educators, finances are a challenge to adopting energy efficiency practices – even when the farms are interested in the equipment – because small farms operate on high risk and low profit margins. For example, according to Small Farm Advisor working with farmers in Fresno (an area not covered by SoCalREN), these farmers make between $30,000 and $125,000 a year, and even when they are grant recipients, funding is not sufficient to tackle energy savings projects (e.g., solar). In some instances, financial assistance is available through reimbursement programs but in these cases, farmers find themselves needing to apply for loans to pay for the initial costs and then wait for their payment from the programs (if they are approved for the loan). One community educator said, "…they're not going to adopt the practice, no matter the saving. Because they may not have the capital to begin with." Increasing costs of crop-growing supplies (e.g., seeds, fertilizer, fuel, pesticides, etc.) also places farmers in a financial predicament, not allowing them to invest in making their farms more energy efficient.

Additionally, some areas may have higher financial barriers. The 2023 spring rains caused over 100,000 acres of farmland in Tulare and Kings County to be impacted by floodwater.[7] While some of the floodwater is now receding, Tulare Lake (that resides in Kings County) has re-emerged and is expected to cover ~35,000 acres for a year or two. While analysis by UC Davis indicates that much of the farmland under Tulare Lake is owned by one farm[8], Kings County has the highest percentage of farms in DAC and so could also have been affected by the flooding, just was not discussed in the articles we found about the flooding. These farms will be financially stressed, and the programs will need to be sensitive to this issue when approaching customers. At the same time, it could be an opportunity to help customers affected by the flooding with no-cost equipment.

**Land Leases and Loan Access**: Farmers who rent face challenges with leases not renewing and they face challenges accessing grant and loan programs such as those offered by the state, listed later in the report. (Table 12) Land tenure (i.e., owning vs leasing) can affect eligibility for loans and grant programs and influence decisions on adopting long-term conservation practices (CDFA, 2020).

Unlike the NASS data that showed only 9% of rural or DAC farms were leased, according to our conversations with Small Farm Advisors and Community Educators, most farmers are leasing. For example, in Fresno the

[7] https://www.agalert.com/california-ag-news/archives/april-5-2023/farmers-brace-for-more-destruction-losses-from-floods/
[8] https://asmith.ucdavis.edu/news/most-tulare-lake-lies-inside-one-big-farm

community educator stated that in 2007, the last time they conducted a farm survey, 80% of farmers were leasing while only 20% owned their land. A similar trend exists in the areas covered by the other Small Farm Advisors we spoke with (Riverside and San Bernardino) with many farmers renting their parcels, although this is based on their personal experiences in assisting farmers rather than formally collected data.[9] One community educator explained that farmers who are leasing are eligible to apply to programs, however, they do require the owner's permission for infrastructure change (e.g., irrigation overhaul, adding filters, digging underground trenches to move water lines, etc.). As a result, lessees may be hesitant to apply to such programs or make infrastructure changes when they are uncertain of how long they will remain in the property. Another strong concern for farmers in Riverside and San Bernardino is regarding the risk of losing their rented land to land developers, causing the displacement of their business. This concern can also dampen the desire to make energy efficiency upgrades that stay with the land.

**Language:** Information on farming practices, programs, marketing, and regulations tend to be in English. (CDFA, 2020). As noted above, the ACS data indicates 13%-17% of households in a rural or DAC ZIP codes "do not speak English well" while according to the Small Farm Advisors we spoke with, a vast majority of farmers served by the Small Farm Advisors and Community Educators in Fresno, Riverside, and San Bernardino speak limited or no English. To mitigate language barriers, the UC Cooperative Extension program provides bilingual services, but there is still a need for more accessible communication. In Riverside, language is described as "a huge issue for farmers who are Latinos." As such, the ACS data is a bit at odds with the "boots on the ground" Advisors description of language issues, but this could be because the Advisors only work with a limited number of farms while the ACS covers households in the entire county.

**Internet Access and Technology**: Lack of internet access on farms ranges from 16% in San Luis Obispo County to 22% in Tulare County (USDA NASS, 2017), therefore some farmers may have limited access to information shared online or via e-email related to energy efficiency upgrades. Farmers tend to miss out on opportunities if they are only made available online. One advisor stated that they often apply for grants on the farmers' behalf because the farmers themselves do not always know how to navigate an online application. However, even when internet access is available, Small Farm Advisors and Community Educators said farmers do not always have the technological literacy to effectively utilize energy efficiency equipment or interfaces (e.g., e-mail, Zoom, etc.).

On the technology side, one community educator stated that the learning curve to using a variable frequency drive (VFD) along with their maintenance requirements can be a challenge for farmers even after 2 to 3 years of using the technology. This experience is exacerbated by drought – requiring more adjustments/maintenance in order for the VFD to operate at its peak efficiency. Since farmers do not have familiarity with how equipment is operated, they are concerned that they will not be able to learn the technology fast enough.

**Engagement:** Farmers from groups whose members have been subject to racial, ethnic, or gender discrimination are less likely to engage with traditional agricultural industry groups and to attend public meetings. As a result, these farmers are often not receiving important information, and their voices are not

[9] Our data does not show Fresno or San Bernardino County data, but our data for Riverside indicates about 4% of farms in the NASS are leased.

always included in decisions about policies that affect their farm businesses. These farmers primarily rely on locally based technical assistance providers like University of California Cooperative Extension (UCCE) staff or Resource Conservation Districts for information regarding their farm businesses and regulations that apply to their businesses (CDFA, 2020). In planning for Agriculture program outreach for HTR farmers, SoCalREN should consider partnering with locally-based organizations and technical assistance providers rather than traditional agricultural industry groups.

SoCalREN should also consider the nature of their outreach and the type of data requested from farmers as these may affect engagement in their programs. The Small Farm Advisors and Community Educators shared that in Fresno, to be able to establish and maintain trust with the community, they do not collect data on who the program is serving. The community educator expressed that they want to protect their privacy and be sensitive to vulnerabilities like immigration status. Survey data is collected in Riverside and San Bernardino; however, the advisor has undergone an Institutional Review Board approval through the University of California to execute their survey and only distribute high level findings (report has yet to be published). Farmers' personal experiences with outside organizations has brewed skepticism. In the past, organizations have collected data without providing services to farmers. One advisor explained this history is what led to the creation of the Small Farm Advisor role – "to build local trust."

## What Programs are Available to Agricultural Customers in 2024?

### Agricultural Energy Efficiency Programs with Deemed Savings Offerings in 2024

Beginning in 2024, agriculture sector customers within the SoCalREN area will have four ratepayer funded programs available to them that include deemed savings (and perhaps a fifth).

Four programs have information (from implementation plans) that enables us to discuss them more:

- Two (2) are from SoCalREN (the previously mentioned Ag-DI and Ag-Retrofit programs)
- Two (2) are provided by the Investor Owned Utilities (IOUs)
    - SCE's Agricultural Energy Efficiency program (SCE_3P_2021AGPUB_001)
    - SoCalGas' Agricultural Energy Efficiency program (SCG3890)
    - Both of the IOU programs are third-party programs (3PPs) where the implementation plan (IP) indicates that the program continues into 2024. ICF designed and is implementing both programs.

CEDARS lists the fifth program but currently lacks an implementation plan:

- This is an SCE proposed program within CEDARS that has a name (Small/Medium Agricultural Equity Program), program ID (SCE_SMA_Equity_001), 2024 budget ($2.6 million) and 2024 savings (748 GWH first year net). As mentioned above, there is no implementation plan on CEDARS, and it is not noted as a program within the CAEECC website (where all 3PP information is listed). If this program is developed, it would most likely focus on smaller farms or farms in DACs.

**All the 2024 Ag programs plan to bring in energy savings**. Of the five programs that offer deemed savings, three are in the Resource Acquisition segment (two existing IOU programs and the SoCalREN Ag-Retrofit program), while the SoCalREN Ag-DI program and the SCE Small/Medium program are Equity programs that will also deliver savings. Excluding the SCE Small/Medium Equity program (since we lack details on it), only SoCalREN's Ag-DI program is exclusively offering deemed measures – the other programs expect to claim savings across multiple platforms (i.e., custom, Normalized Metered Energy Consumption (NMEC) or On Bill Financing (OBF)). (Table 10)

**2024 Ag programs in the SoCalREN area have similar customer targets.** Based on information within their respective IPs, these five programs will be targeting the same broad agricultural audiences, with very slight nuances. Specifically, SoCalGas is seeking to serve "any size agricultural customers who have to control the environment to raise crops or animals as well as dairies, wineries, and customers performing post-harvesting processing". The SCE Energy Efficiency program is also targeting the broad agricultural sector and any size of

customer.  We assume that the proposed SCE Small/Med Equity program will target small and medium size agricultural customers (based solely on the program name) as well as other characteristics to fit into the Equity segment. The SoCalREN programs are seeking to serve the same broad agricultural sector but targeting small and medium size customers and especially those customers within San Joaquin Valley and the Central Coast. (Table 10, shown below in order by Program ID)

**Table 10. PY24 Programs with Deemed Savings**

| Program ID | Program Name (segment) | PY24 Budget *($ millions)* | PY24 TSB *($ millions)* | PY24 Expected First Year Net MWh | PY24 Expected First Year Net MW | PY24 Expected First Year Net Therms | Platform the program expects to use to claim savings | Targeted Audience noted in Implementation Plan |
|---|---|---|---|---|---|---|---|---|
| **SCG3890** | AG-Agriculture Energy Efficiency Program (resource acquisition) | $3.46 | $3.20 | 0.04 | -- | 360,025 | Custom, Deemed, NMEC, OBF | Controlled environment agriculture; non-dairy animal production; post-harvest processing; wineries, dairies. Also, some DAC. |
| **SCE_3P_2021AGPUB_001** | Agriculture Energy Efficiency Program (resource acquisition) | $3.00 | Unknown (not on CEDARS and not in IP) | 6,666 | 0.93 | -- | Custom, Deemed, NMEC, OBF | Growing and production on-farm crops and animal projects as well as post-harvest production (e.g., wine production, nut drying, etc.). Also, some DAC and HTR. |
| **SCE_SMA_Equity_001** | Small Medium Agricultural Equity Program (equity) | $2.62 | $0.24 | 0.75 | 0.25 | (997) | Unknown | Small and medium Ag customers (with SCE service account). No additional details available (i.e., no implementation plan). |
| **SCR-AGR-G2** | Rural-HTR Agricultural DI (equity) | $1.16 | $0.38 | 0.38 | 0.03 | 36,954 | Deemed | Small and medium Ag customers (with SCE or SoCalGas service account) engaged in growing, producing, and processing various on-farm crops and animal products with a special emphasis on rural and underserved communities. Targeting San Joaquin Valley and Central Coast. All targeted are DAC or HTG. |
| **SCR-AGR-G3** | Agriculture Retrofit (resource acquisition) | $0.87 | $2.06 | 4.12 | 4.51 | -- | Custom, Deemed, NMEC, OBF | Same as SCR-AGR-G2 |
| **Total** | | $11.10 | $5.88 | 11.95 | 5.73 | 395,981 | | |

The estimated savings from these five programs are a very small component of the overall energy efficiency 2024 energy efficiency portfolio (0.8% kWh and 0.6% therms of the overall statewide portfolio savings excluding C&S). However, they are a relatively large part of the agricultural savings within the state (37.3% kWh and 66.1% therms of the agricultural sector savings).

## Details on 2024 Agricultural Programs

SoCalREN is offering distinct programs to garner deemed savings for agricultural customers but using a separate program (Ag-PDP) to find customers and move them into the appropriate agricultural program. SCE and SoCalGas, on the other hand, include multiple options similar to the various SoCalREN programs within a single program. All three programs have very similar outreach and offer audits and technical assistance. While SoCalREN and SCE are offering direct install (and SoCalGas might offer this as a service), the three programs have different direct install measures. (See the different measures in the table below.)

Note that in total, the three PAs are seeking to serve slightly over 1,400 Ag customers in DAC over a four-year period which is a high percentage of the ~5,500 farms in DAC (~26%). (Table 11)

**Table 11. Program Design Details for Programs Offering Deemed Savings**

| Program Design | SoCalREN Ag-DI and Retrofit *(implementer TBD)* | SCE Ag EE *(ICF as implementer)* | SoCalGas Ag EE *(ICF as implementer)* | Evaluator Reflections |
|---|---|---|---|---|
| **Targets** | 731 DAC customers within the Ag sector across the four years counted from any Ag program offered by SoCalREN. *(Source: page 19 of the EE Portfolio application for 2024-2027)* | Quantitative targets of 162 HTR (1,554,050 kWh and 18 kW gross) and 527 DAC (10,101,325 kWh and 3,251 kW gross) cumulative across program years. *(Source: implementation plan)* | Quantitative program targets are relatively low, but have a high number of HTR and DAC. Targets of 12 small customers (4 DAC and 5 HTR), 8 medium customers (3 DAC and 0 HTR) and 5 large customers (1 DAC and 0 HTR) for a total of 25 customers (8 DAC and 5 HTR) cumulative across program years. *(Source: implementation plan)* | The three PAs are seeking to serve slightly over 1,400 Ag customers in DAC or HTR over a four-year period. (SCE and SoCalGas indicate targets of 167 HTR and 535 DAC while SoCalREN targets are noted as DAC.) This is a high percentage of the ~5,500 farms in DAC or HTR (~26%) and as such, we consider these ambitious targets. |
| **Outreach** | Ag-DI and Retrofit will have customers sent to the program based on outreach through SoCalREN's PDP program. PDP plans to collaborate with the IOU Account Executives (AEs) and SoCalREN's Public Sector to gain introductions to other Program stakeholders, such as vendors, trade allies, and manufacturers. SoCalREN will provide marketing collateral, while the IOU AEs will provide contact information for SoCalREN's PDP outreach staff who will follow up for direct, one- | Primary focus is on direct outreach by ICF account managers but will include 3 letters/postcards per year to targeted customer groups in the first year to see if this approach works. | Will utilize SoCalGas Account Executive and Regional Marketing Advisor Support services to make customer introductions, identify known project plans, identify potential projects that need follow-up to move forward, etc. ICF account managers will also perform outreach. | While the programs are targeting slightly different customers, the outreach is very similar and the SoCalREN PDP program will need to clearly differentiate their services to avoid market confusion. Additionally, to reach DAC/HTR customers, PDP may need to rely on sources other than the IOU AEs since AEs tend to work with larger customers. |

| Program Design | SoCalREN Ag-DI and Retrofit *(implementer TBD)* | SCE Ag EE *(ICF as implementer)* | SoCalGas Ag EE *(ICF as implementer)* | Evaluator Reflections |
|---|---|---|---|---|
| | on-one interactions to enroll customers. | | | |
| **Offerings – Audits / Assessment** | Once enrolled (via a non-binding document), PDP staff will complete a detailed facility or site visit to identify a preliminary list of recommended energy efficiency measures. Note that these measures may be provided by SoCalREN's Ag-DI or Retrofit programs, depending on the customer's unique characteristics. | Evaluate facilities and processes directly with agriculture customers and advise them on EE solutions that best meet their needs allowing for multiple paths and a layered approach to making EE upgrades over time and at the right time in the growing cycle | Evaluate facilities and processes directly with agriculture customers and advise them on EE solutions that best meet their needs allowing for multiple paths and a layered approach to making EE upgrades over time and at the right time in the growing cycle | All programs are using audits / assessments to determine the best EE measures for the customer. |
| **Offerings – Technical Assistance** | Once enrolled, PDP staff act as a source of technical assistance to customers, as needed. This may include education on energy efficiency and/or help with program forms and/or project management of the installation of EE measures. | Engineering and project management support provided to help customers quantify opportunities and determine project scope. | Participating customers will have access to local engineers and subject matter experts to quickly provide decision support, answer technical questions, and provide basic analysis. | All programs are offering engineering expertise and analysis. |
| **Offerings – Direct Install** | Provide specific measures through a direct installation approach to HTR/DAC customers. Noted measures for DI in the IP are lighting, booster and well pumps, and greenhouse heating. | Provide specific measures through a direct installation delivery approach to HTR/DAC customers. Noted measures for DI in the IP are lighting and ventilation. | The program may select certain contractors to install DI measures. Noted measures for DI in the IP are pipe/tank insulation and storage water heaters. | Two programs indicate they will offer DI and one might. Except for lighting, the SCE and SoCalGas programs as described in the IPs offer different DI measures from those being offered by SoCalREN. |

*Source: Implementation Plans*

## What are Other Programs Available to Farmers that Offer Energy Efficiency?

Governmental agencies offer programs, primarily in the form of funding, for agricultural customers to adopt energy efficiency practices and/or equipment. Most programs exist for the purpose of reducing greenhouse gas emissions, but they do not necessarily focus on targeting rural-HTR farmers. State and federal programs such as these generally have specific timelines to put in applications and may need relatively sophisticated knowledge to obtain a grant or require matching funds (and so be less available for rural-HTR farmers given the barriers noted above unless supported by a program such as Ag-PDP). In the table below, we describe six water conservation and energy efficiency oriented programs that offer support to farmers.

**Table 12. Program Design Details for Other Programs Available to Farmers**

*(Water Conservation and Energy Efficiency Oriented)*

| Program Design | Program Name | Description | Agency |
|---|---|---|---|
| **Grants** | State Water Efficiency & Enhancement Program (SWEEP) | Offers financial assistance to implement irrigation systems that reduce greenhouse gases and save water on California agricultural operations. Eligible system components include (among others) soil moisture monitoring, drip systems, switching to low pressure irrigation systems, pump retrofits, variable frequency drives and installation of renewable energy to reduce on-farm water use and energy. | California Department of Food and Agriculture |
| **Grants/Technical Assistance** | Water Efficiency Technical Assistance (WETA) Grant Program | Designed to facilitate technical assistance to agricultural operations for on-farm water and energy use efficiency and nutrient management | California Department of Food and Agriculture |
| **Grants** | Renewable Energy for Agriculture Program (REAP) | Offers grants that encourage the installation of renewable energy technologies serving agricultural operations to reduce greenhouse gas emissions targeting local communities, **including priority populations in disadvantaged and low-income communities.** | California Energy Commission |
| **Grants** | Food Production Investment Program (FPIP) | Offers grants to help food processors accelerate the adoption of advanced energy efficiency and renewable energy technologies. Projects that are located within and provide a benefit to disadvantaged and low-income communities are awarded a higher application score. | California Energy Commission |
| **Financial Assistance** | Environmental Quality Incentives Program (EQIP) | Financial assistance is available to inventory and analyze farm systems that use energy and identify opportunities to improve efficiency. Eligible producers can apply for EQIP assistance for the purchase, installation, or retrofit of certain buildings of equipment to improve energy efficiency. | Natural Resources Conservation Service, United States Department of Agriculture |
| **Financial Assistance** | Emergency Conservation Program (ECP) | Helps farmers and ranchers to repair damage to farmlands caused by natural disasters and to help put in place methods for water conservation during severe drought. The ECP does this by giving ranchers and farmers funding and assistance to repair the damaged farmland or to install methods for water conservation. | Farm Service Agency, United States Department of Agriculture |

*Source: Data on websites*

Besides the programs described above that more directly focus on water conservation or energy efficiency, farmers have other state level programs to support their farming operations. In the table below (Table 13), we describe four California Department of Food and Agriculture programs that provide financial assistance or grants to farmers.

**Table 13. Program Design Details for Other Programs Available to Farmers**
***(GHG Oriented)***

| Program Design | Program Name | Description | Agency |
|---|---|---|---|
| **Financial Assistance** | The Healthy Soils Program (HSP) | Offers financial incentives for implementation and/or demonstration of on-farm conservation management practices that improve soil health, sequester carbon and reduce greenhouse gas emissions. | California Department of Food and Agriculture |
| **Grants** | Conservation Agriculture Planning Grants Program | Funds the development of plans that will help farmers and ranchers identify actions for climate change mitigation and adaptation, further environmental stewardship on farms and ranches and ensure agricultural food security into the future. | California Department of Food and Agriculture |
| **Financial Assistance** | Dairy Digester Research & Development Program (DDRDP) | Offers financial assistance for the installation of dairy digesters in California. | California Department of Food and Agriculture |
| **Financial Assistance** | Alternative Manure Management Program (AMMP) | Financial assistance for the implementation of non-digester manure management practices in California | California Department of Food and Agriculture |

*Source: Data on websites*

## What has been the Uptake in Prior Agricultural Installations for Deemed Measures?

From 2018-2022, SCE and SoCalGas ran two programs that offered deemed measures (these programs spent an average of ~$250,000 from 2018-2022). Starting in 2022, these two programs were superseded by the IOU third-party implemented programs (3PPs) described above (with 2024 budgets combined of $6.46 million).

The SoCalREN 2024 Ag-DI program (at a 2024 budget of $1.16 million) will offer savings only from deemed measures and so that is the lens we use when looking at previous programs. Examining past participation can help inform future program goal setting and outreach strategies.

**Deemed savings are about half or more of historic savings.** From 2018-2022, the deemed savings from the Agricultural programs active in these years garnered about half of claimed first year net electric savings (51%), the majority of first year net demand savings (85%) and the majority of first year net gas savings (94%). (See Table 14.)

**Table 14. 2018-2022 IOU Ag Program Custom and Deemed Claimed First Year Net Savings and Percent Deemed**

| Impact Type | Claimed First Year Net MWh | Claimed First Year Net MW | Claimed First Year Net Therms |
|---|---|---|---|
| Custom | 4,226 | 0.30 | 167,684 |
| Deemed | 4,456 | 1.74 | 2,816,009 |
| Total | 8,682 | 2.04 | 2,983,693 |
| % Deemed | 51% | 85% | 94% |

*Source: CEDARS data*
**Savings from SCE-13-SW-004C, SCG3720, and SCG3890.*

Deemed savings from agricultural customers in the SCE and SoCalGas program for 2018-2022 shown in the table above came primarily from irrigation, refrigerated storage, and thermal curtains. Four of SoCalREN's DI measure groups have been offered by the past IOU programs. Of the five different measure groups that the SoCalREN DI program expects to offer in 2024, three of them had historic savings within the previous 2018-2022 programs, although the number of claims is relatively few. (Table 15)

**Table 15. SoCalREN Ag-DI Program Deemed Measure Groups with Historic Savings**

| Measure Groups Expected to be offered in the SoCalREN Ag DI program | # of Claims in 2018-2022 for deemed measure* |
|---|---|
| **Well Pump (Overhaul/VSD)** | 142 |
| **Green Houses and Indoor Ag heating**** | 59 |
| **Booster Pump (Overhaul/VSD)** | 37 |
| **Lighting (Indoor Ag or Outdoor Area)** | 0 |
| **Evapotranspiration Monitoring and Optimization** | 0 |

*Source: CEDARS*
**This number loosely represents the number of installations of the measure type, but not the exact number of the measure. For example, a single claim could reflect more than one pump.*
***Savings are from greenhouse heat curtains and infrared film*
****This is not a deemed measure in 2023, so may not be available for the SoCalREN DI program in 2024 (as they only plan to deploy deemed measures).*

**2024 forecast deemed electric savings are much larger than historic trends**. While the five programs that expect to offer deemed savings in 2024 are budgeting significantly more in 2024 than spent in 2018-2022[10], they also appear to have an ambitious electric goal as their combined annual deemed savings for 2024 is larger than deemed savings average from the last five years (2018-2022). The energy savings for one year are 686% more

[10] The 2024 budget of $11.1 million is for all measures, not just deemed. As such, the $11.1 million to $225,000 average per year spent for deemed only measures is not directly comparable, but we describe this here for context.

than the average of the past five years. Conversely, the one-year therm savings is 61% of the average historic savings. (Table 16)

**Table 16. Comparison of 2024 Expected Deemed Savings and Historic Trends**

| Savings | Historic one year average of deemed savings *(from Table 14, divided by 5)* | Planned one-year of deemed savings *(from Table 10 multiplied by percentage in Table 14))* | Difference between historic average and planned 1-year |
|---|---|---|---|
| **First Year Net MWh** | 891 | 6,113 | 686% |
| **First Year Net MW** | 0.35 | 4.88 | 1,394% |
| **First Year Net Therms** | 563,202 | 343,727 | 61% |

*Source: Evaluation team analysis*

# Summary of Ag-DI Program Design Considerations based on Findings

This section draws on the study findings to provide SoCalREN with implementation considerations and is provided here to get this information shown first.

As the SoCalREN implementers for the 2024 Agricultural programs revisit the current implementation plans, there are a few areas to consider and determine if any updates are needed to either the budget or the plan. The first three considerations relate to outreach and the application process and are more applicable to the Ag-PDP program since they will be funneling customers to the Ag-DI program. The last consideration relates to the program measures and is applicable to both the Ag-DI and Ag Retrofit programs.

SoCalREN implementers may need to:

- Ensure that the outreach is very targeted, clear and offered in multiple languages. As an Equity segment program, the Ag-DI program plans to work with customers who are either underserved, HTR, or in a DAC.
    - *Very Targeted:* From 2024-2027, the SoCalREN, SCE, and SoCalGas programs seek to serve slightly over 1,400 DAC Ag customers. This is a high percentage of existing farms in DAC. As such all outreach by SoCalREN is extremely important to reach the planned goal of 731 DAC customers and should be very targeted.
    - *Clear Outreach:* The SCE and SoCalGas Ag programs are targeting very similar customers with similar offerings and SoCalREN will need to clearly differentiate their program to avoid market confusion.
    - *Multi-language Outreach*: While many farmers speak English well, those who do not (i.e., a hard-to-reach criteria) would benefit from outreach and program applications in other languages. Content in Spanish and Chinese are a good start, but the program may want to set a process in place to be able to quickly provide content in other languages such as Hmong, Vietnamese or Punjabi.
- Find new outreach partners. The Ag-DI program targets smaller and HTR customers which typically do not have IOU Account Executives (a typical avenue for outreach to business customers) and so SoCalREN may want to explore working with the relevant California Small Farm Advisors, USDA County Farm Service Agencies, locally-based organizations, local businesses that serve farms such as local farm stores/hardware stores, local branches of farm credit organizations such as AgWest Farm Credit, or use community events such as county fairs to best find the target market.
- Adjust application processes. Not all farmers have internet access and even when they do, online applications can be difficult. To reach all farmers, SoCalREN may want to deploy non-internet-based outreach and determine an easy-to-follow application process using hardcopy (e.g., apply at the same time as an onsite visit).
- After a year, re-evaluate incentives. Farmers who lease their land may not want to perform energy efficiency projects that stay with the land unless the cost to do so is very small. Additionally, farmers with low sales may have difficulty finding ready cash for energy efficiency projects, even if they want to move forward with them.
    - The SoCalREN Ag-DI program specifically plans to install low and no cost items, but the program implementers may need to take stock after the first year to see if all measures need to be at no cost to the customer to drive installations.

Furthermore, for the Ag-DI program, the measures that SoCalREN plans to offer have had very few installations in SCE or SoCalGas programs over the past five years (less than 250 measures claimed in total) which may mean that meeting the SoCalREN DAC participation targets could be very difficult and SoCalREN will need to spend more on deemed measures than planned or obtain custom savings from DAC/HTR customers.

# Appendix A: Sources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# Appendix B: Commodities and Number of Farms by County

There are about 18,000 farms in the counties, a value that is about the same as the 16,000 customers described in the business plan but less than the ~29,000 small and medium accounts also noted in the business plan. This is because the small and medium account values are based on service accounts. Farms that irrigation generally have many pumps and a single pump often has its own account.

Light gray commodities less likely to need deemed measures offered by DI program

**Bold** counties are the counties we considered focusing on and those with a green circle are the final counties for the analysis.

**Table 17. Commodities and Number of Farms by County**

| County | # of Farms (out / in DAC) | Total Value ($M) | Leading Commodities |
|---|---|---|---|
| **Kern** | 758 / 856 | 7.96 | Grapes (table), almonds, pistachios, tangerines, mandarins |
| **Tulare** | 1,327 / 2,207 | 7.25 | Milk, oranges (navel), cattle & calves, grapes (table) |
| **Kings** | 63 / 1,463 | 2.24 | Milk, pistachios, cattle & calves, cotton |
| **Ventura** | 1,989 / 125 | 2.02 | Strawberries, lemons, avocados, raspberries |
| Santa Barbara | 1,251 / 0 | 1.84 | Strawberries, Cauliflower, Broccoli, grapes (wine) |
| San Luis Obispo | 2,256 / 0 | 1.06 | Strawberries, grapes(wine), vegetables , avocados |
| Mono | 40 / 0 | 0.03 | Alfalfa Hay, Cattle & Calves, Sheep & Lambs, Livestock |
| Inyo | 99 / 0 | 0.02 | Cattle & Calves, Nursery Products, Alfalfa Hay, Pasture |
| Imperial* | 144 / 259 | 2.20 | Cattle (heifers & steers), vegetables, alfalfa hay, lettuce (leaf) |
| **Riverside*** | 1,769 / 644 | 1.43 | Nursery (woody ornamentals), milk, alfalfa hay, grapes (table) |
| Los Angeles * | 1,363 / 563 | 0.12 | Nursery products, field crops (unspecified), apiary (bees) products, vegetables |
| San Bernardino* | 450 / 416 | 0.40 | Milk, Chicken Eggs, Cattle & Calves, Cattle (Cull Milk Cows) |
| Orange* | 510 / 157 | 0.09 | Nursery (woody ornamentals),fruits and nuts, vegetable), nursery products |

*Counties outside of San Joaquin Valley or Central Coast Regions