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Program Endorsement Brief:

Solar Photovoltaic Installers in the North/Far North region

North/Far North Center of Excellence, March 2020

OVERVIEW

This report provides an overview of the labor market demand and related educational program supply for occupations related to solar photovoltaic installers in the 7-county North region, the 15-county Far North region, and California.

SUMMARY OF KEY FINDINGS

- Solar photovoltaic installers are projected to have 61 openings per year over the next five years.
- At $21 per hour, median hourly wages for the selected occupations are above the regional living wage for a single adult.
- Solar photovoltaic installers are typically required to have a high school diploma for entry-level work. New hirers will typically go through one to 12 months of paid, on-the-job training.
- While 30% of existing solar photovoltaic installers have attended some college or earned an associate's degree, the majority (62%) hold only a high school diploma.
- Solar photovoltaic installer training programs in the North region conferred an average of 25 awards per year over the last three years.

The report contains the following sections:

- Occupational demand,
- Wages and job postings,
- Education and training,
- Regional program supply, and
- Findings and recommendations.

INTRODUCTION

The North/Far North Center of Excellence was asked to provide labor market information for a proposed program at a regional community college. This report focuses on the following occupations:

- Solar photovoltaic installers (47-2231.00)

A review of related programs revealed the following program(s) and Taxonomy of Programs (TOP) code(s) are appropriate for inclusion in this report:

- Energy systems technology (0946.10)

The corresponding Classification of Instructional Programs (CIP) code(s) are:

- Energy management and systems technology/technician (15.0503)
- Solar energy technology/technician (15.0505)

OCCUPATIONAL DEMAND

The following Standard Occupational Classification (SOC) codes related to the proposed program were included in the demand analysis:[1]

47-2231.00 - Solar Photovoltaic Installers	
Description:	Assemble, install, or maintain solar photovoltaic (PV) systems on roofs or other structures in compliance with site assessment and schematics. May include measuring, cutting, assembling, and bolting structural framing and solar modules. May perform minor electrical work such as current checks.
Sample job titles:	Installer, Photovoltaic Installer (PV Installer), PV Design and Installation Technician, Solar Designer/Installer, Solar Installer, Solar Installer Technician, Solar Photovoltaic Installer (Solar PV Installer), Solar Technician

Exhibit 1 summarizes the job trends by SOC codes in the 7-county North region, the 15-county Far North region, and California.[2]

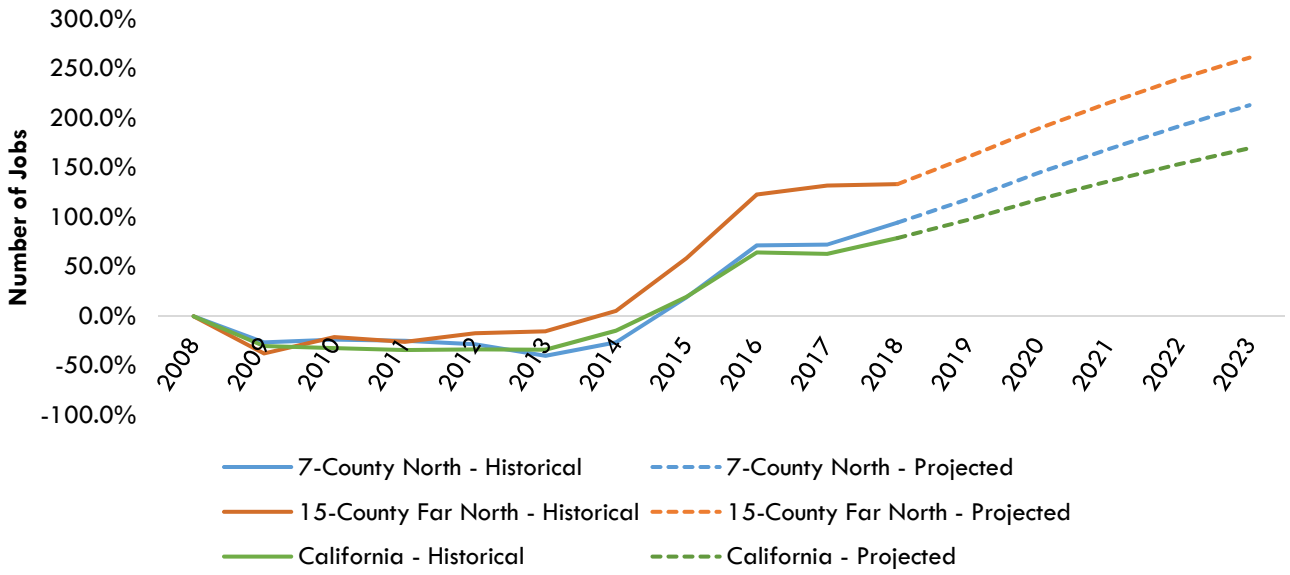
Exhibit 1. Employment and projected occupational demand[3]

Occupation	SOC	2008 Jobs	2018 Jobs	2023 Jobs	2018-23 % Change	Annual Openings
Solar Photovoltaic Installers	47-2231	124	214	388	81.6%	61
NORTH	**TOTALS**	**124**	**214**	**388**	**81.6%**	**61**
Solar Photovoltaic Installers	47-2231	59	138	213	54.7%	33
FAR NORTH	**TOTALS**	**59**	**138**	**213**	**54.7%**	**33**
Solar Photovoltaic Installers	47-2231	2,310	4,136	6,232	50.7%	940
CALIFORNIA	**TOTALS**	**2,310**	**4,136**	**6,232**	**50.7%**	**940**

[1] O*NET OnLine. U.S. Department of Labor Education & Training Administration. Accessed November 22, 2019. https://www.onetonline.org/.
[2] The 7-county North region includes El Dorado, Placer, Nevada, Sacramento, Sutter, Yolo and Yuba. The 15-county Far North region includes the Butte, Colusa, Del Norte, Glenn, Humboldt, Lake, Lassen, Mendocino, Modoc, Plumas, Shasta, Sierra, Siskiyou, Tehama and Trinity counties. The 22-county North/Far North region is the combination of the 7-county North and 15-county Far North regions.
[3] Emsi 2019.4; QCEW Employees, Non-QCEW Employees and Self-Employed.

Exhibit 2 compares the rates of change of the total number of jobs between 2008 and 2018 in the North region, the Far North region, and California. It also compares occupational demand projections from 2018 through 2023 across the same areas. The rate of change is indexed to the base year 2008 total number of jobs.

Exhibit 2. Rate of Change for Selected Occupations[4]



WAGES

Exhibit 3 compares the median hourly wages of the selected occupations in the study regions to the North region's 7-county average living wage for a one-adult household and a one-adult, one-child household.[5]

Exhibit 3. Wages for selected occupations[6]

[4] Ibid.
[5] "Family Needs Calculator (Formerly the Self-Sufficiency Standard)." Insight Center for Community Economic Development, February 2018. https://insightcced.org/2018-family-needs-calculator/.
[6] Emsi 2019.4; QCEW Employees, Non-QCEW Employees and Self-Employed.

JOB POSTINGS

Burning Glass identified a pool of 189 job postings in the North region for the selected occupations. This data represents job listings posted online within the last year, from March 1, 2019, through February 29, 2020.

Exhibit 4 compares the 12-month job posting trends of the selected occupations to the median number of job postings in the North region.

Exhibit 4: Job postings trend for selected occupations[7]

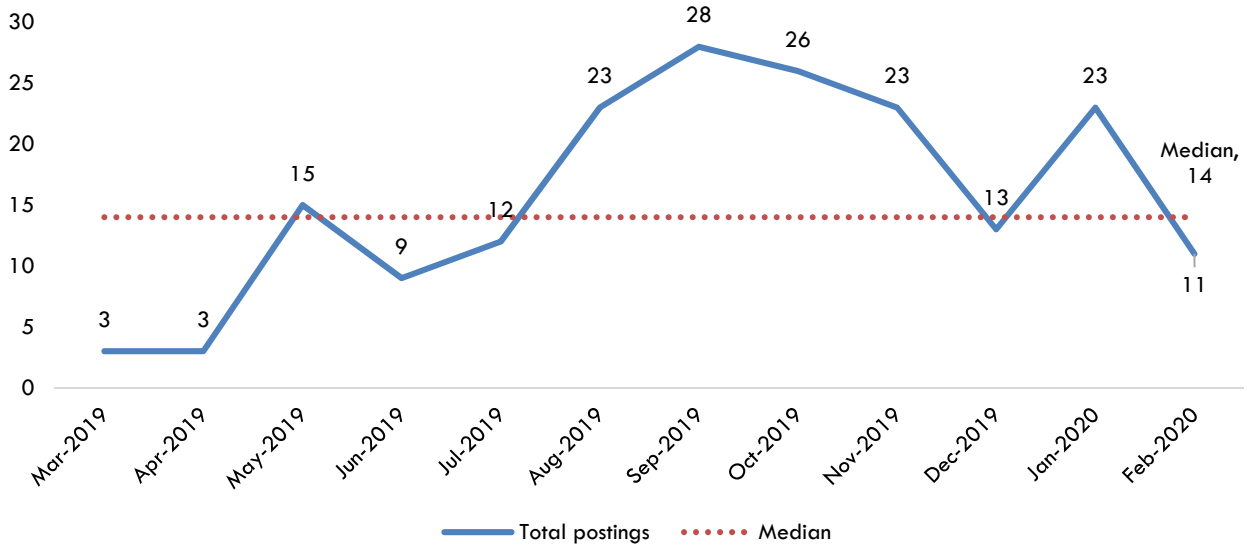
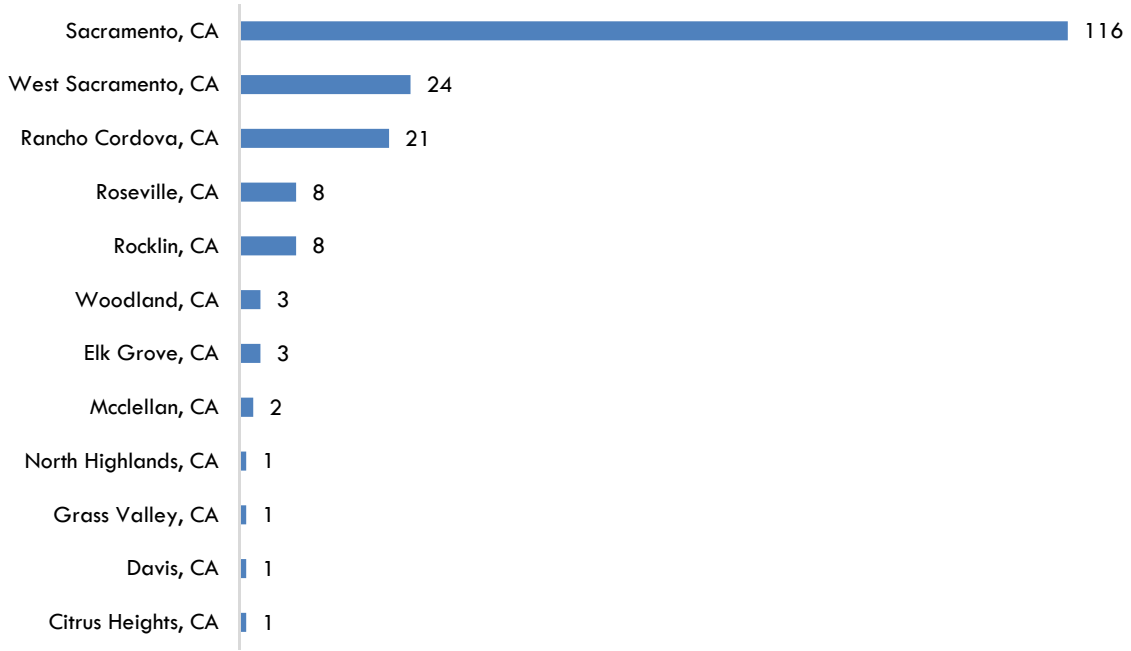


Exhibit 5 shows the number of job postings in the North region, by city, for the selected occupations.

Exhibit 5. Top job postings locations for selected occupations[8]



[7] Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool," http://www.burning-glass.com, 2019.
[8] Ibid.

Exhibit 6 lists North region employers with the most job openings for the selected occupations. Eighty-eight percent of job postings included the employer's name.

Exhibit 6: Top employers by number of job postings[9]

Employer	Number of Postings	Percent of Postings
Freedom Forever	17	10%
Villara Building Systems	16	10%
Vivint Solar	6	4%
Sunsystem Technology	6	4%
Phoenix Solar Energy	6	4%
Thor Electric	5	3%
Sunrun	5	3%
Hub Consulting	5	3%
Cell Energy Incorporated	5	3%
V3 Electric	4	2%

Exhibit 7 shows the top job titles for the selected occupations in the North region. All 189 job postings included a job title.

Exhibit 7. Top job titles by number of job postings[10]

Title	Job Postings	% Job Posting
Solar Installer	99	52%
Lead Solar Installer	24	13%
Solar Technician	14	7%
Residential Solar Installer	7	4%
Commercial Solar Technician	4	2%
Solar Installation Supervisor, Information And Technology Industry	3	2%
Solar Installation Auditor	3	2%
Solar Electric Installer	3	2%
Solar Installer/Crew Lead	2	1%
Solar Installer, Residential, Solar	2	1%

[9] Ibid.
[10] Ibid.

Exhibit 8 shows the skills most in-demand for the selected occupations in the North region. Ninety-two percent of job postings included skills information.

Exhibit 8. Top skills by number of job postings [11]

Specialized Skills	Job Postings	% Job Posting
Sales	165	44%
Solar Sales	126	33%
Customer Service	107	28%
Solar Installation	103	27%
Roofing	87	23%
Photovoltaic (PV) Systems	76	20%
Solar Energy	75	20%
Prospective Clients	53	14%
Schematic Diagrams	46	12%
Solar Panels	45	12%
Foundational Skills	**Job Postings**	**% Job Posting**
Physical Abilities	101	58%
Communication Skills	68	39%
Detail-Oriented	50	29%
Teamwork / Collaboration	43	25%
Problem Solving	38	22%
Troubleshooting	36	21%
Verbal / Oral Communication	36	21%
Organizational Skills	34	20%
Writing	34	20%
Multi-Tasking	18	10%
Software and Programming Skills	**Job Postings**	**% Job Posting**
Microsoft Office	7	4%
Salesforce	3	2%

[11] Ibid.

EDUCATION AND TRAINING

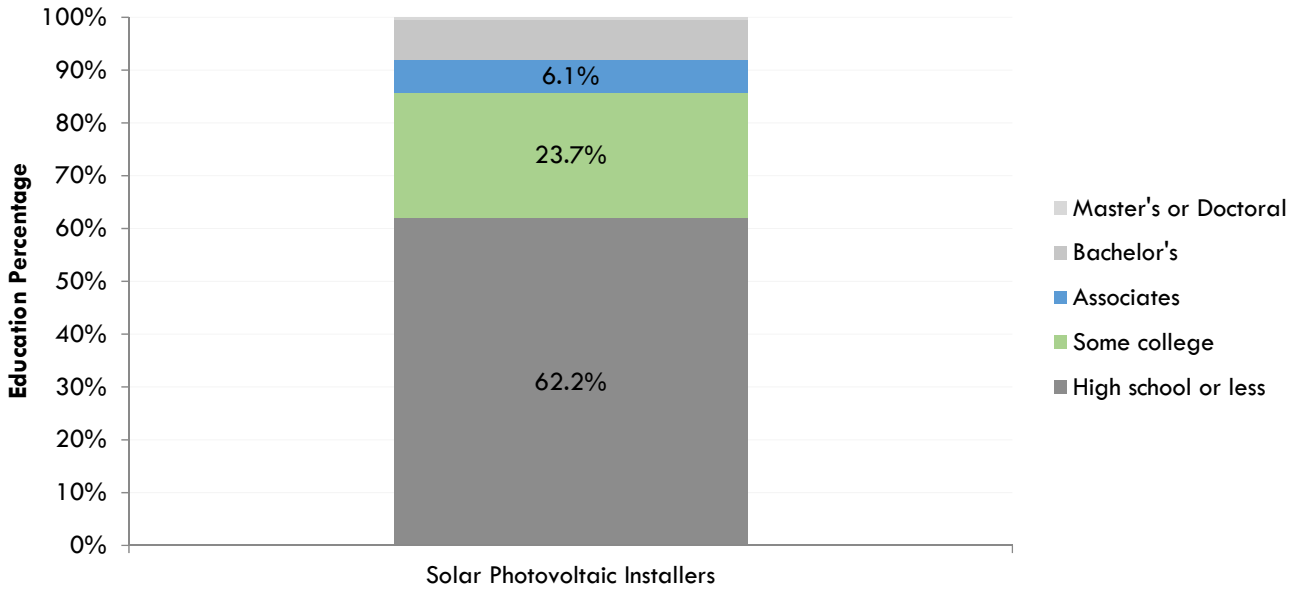
Exhibit 9 shows the typical education requirements, on-the-job training, and work experience requirements for entry-level positions in the selected occupations in the North region.

Exhibit 9. Typical education, training, and work experience for selected occupations[12]

Occupations	SOC	Typical Entry-Level Education	Typical On-The-Job Training	Work Experience Required
Solar Photovoltaic Installers	47-2231	High school diploma or equivalent	Moderate-term on-the-job training	None

Exhibit 10 shows the average level of educational attainment for workers 25 years and older by occupation across the U.S.

Exhibit 10. Typical educational attainment for selected occupations, nationally[13]



[12] Emsi 2019.4; QCEW Employees, Non-QCEW Employees and Self-Employed.
[13] "Educational Attainment for Workers 25 Years and Older by Detailed Occupation." U.S. Bureau of Labor Statistics. U.S. Department of Labor, September 4, 2019. https://www.bls.gov/emp/tables/educational-attainment.htm.

PROGRAM SUPPLY

Exhibit 11 compares the average number of certificates and degrees conferred by selected programs over the last three academic years.

Exhibit 11. Annual average of awards conferred by program, 2016-2019[14]

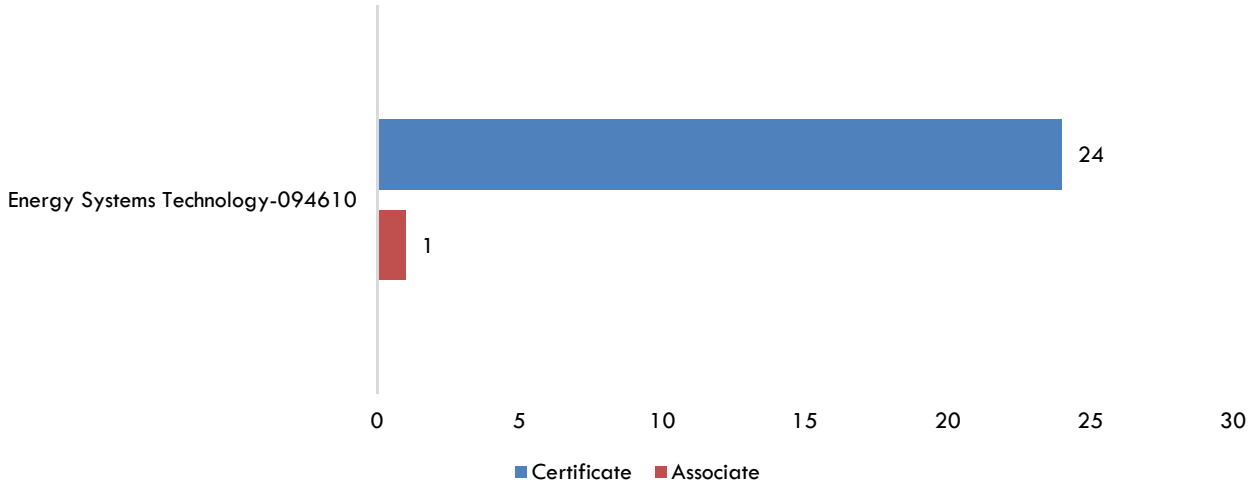
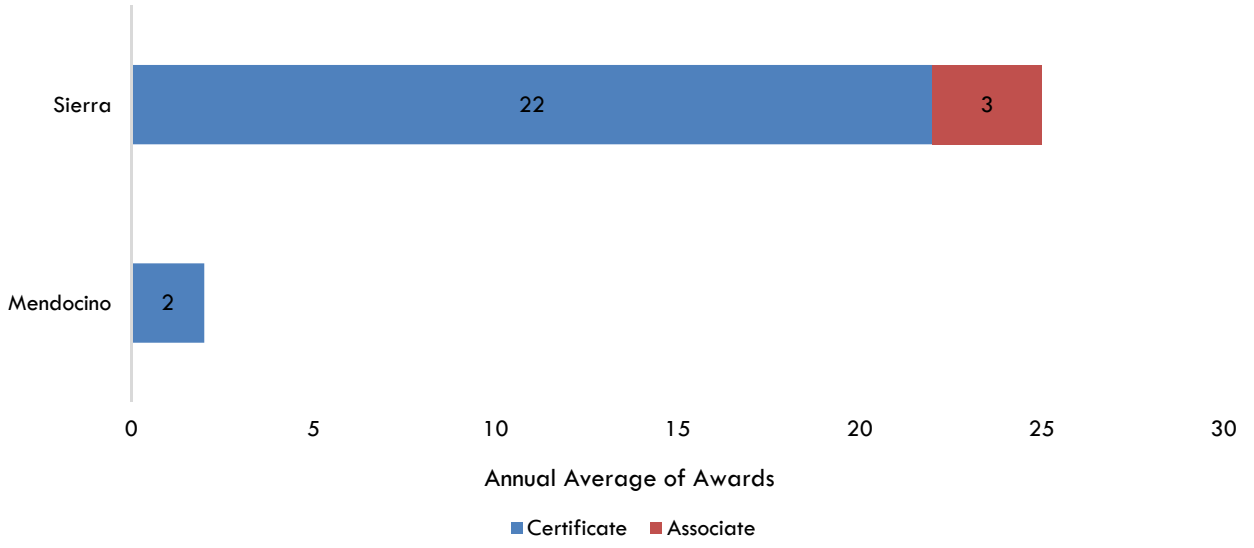


Exhibit 12 compares the average number of certificates and degrees conferred by postsecondary training providers over the last three academic years.

Exhibit 12. Annual average of awards conferred by training providers, 2016-2019[15]



[14] COE Supply Tables, California Community Colleges Chancellor's Office DataMart, and Integrated Postsecondary Education Data System (IPEDS).
[15] Ibid.

FINDINGS

- Between 2008 and 2018, jobs for solar photovoltaic installers increased by 72% in the North region alone.
- Jobs for solar photovoltaic installers in the North are projected to increase by 82% over the next five years, adding 174 new jobs by 2023.
- North region solar photovoltaic installers are projected to have 61 job openings per year over the next five years.
- At $23 per hour, median hourly wages for solar photovoltaic installers are highest in the North region and significantly above the living wage for a single adult.
- Burning Glass Labor Insights identified a pool of 189 online job postings for solar photovoltaic installers (and related occupations) in the last 12 months. While the number of online job postings for solar photovoltaic installers peaked at 28 in September 2019 and at 23 in January 2020, the median hovers around 14 job postings per month.
- Solar photovoltaic installers are typically required to have a high school diploma, or its equivalent, for entry-level work. Installers also receive a moderate amount of on-the-job training, which involves one to 12 months of paid on-the-job experience and informal training.
- About 30% of existing solar photovoltaic installers have either attended some college or earned an associate degree. Sixty-two percent of existing installers have, at most, a high school diploma.
- North region postsecondary training providers conferred an average of 22 certificates and three associate degrees in related solar photovoltaic installation programs between 2016 and 2019.

RECOMMENDATIONS

- Based on a three-year average of annual award in related North region solar photovoltaic installation programs (25 certificates and degrees) and projected yearly openings for solar photovoltaic installers (61 openings) the region appears to have room for new training programs related to the occupation.

COE Recommendation		
Move forward with program	Program is not recommended	Additional information needed
☒	☐	☐

METHODOLOGY

Occupations in this report were identified using O*Net. Findings in this report were determined using labor market data from the Bureau of Labor Statistics (BLS), U.S. Census Bureau data from Emsi, and jobs posting data from Burning Glass.

APPENDIX A: DATA SOURCES

Sources used for data analysis purposes in this report include:

- U.S. Department of Labor/Employment and Training Administration (DOLETA) O*NET Online
- Burning Glass, Labor Insight/Jobs
- Economic Modeling Specialists, International (EMSI)
- California Employment Development Department, Labor Market Information Division (EDD, LMID)
- Bureau of Labor Statistics, Occupational Employment Statistics (OES)
- California Community Colleges Chancellor's Office, Cal-PASS Plus LaunchBoard
- Living Insight Center for Community Economic Development, Self-Sufficiency Standard Tool for California
- California Community Colleges Chancellor's Office Management Information Systems (MIS Data Mart)
- U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS)

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