

PROPOSITION 39 JOBS REPORTING: METHODOLOGY AND INNOVATION

A Report to the Citizens Oversight Board of  
The California Clean Energy Jobs Act

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## INTRODUCTION

The California Clean Energy Jobs Act (CCEJA), created by initiative Proposition 39 in 2012 and legislated under Senate Bill 73, provides funding for the planning and installation of clean energy measures, such as energy efficiency upgrades and clean energy generation in public educational facilities in California. The program was funded by closing a loophole in California's corporate income tax code and allocating the projected revenue to the General Fund and the Clean Energy Job Creation Fund for five years, beginning in fiscal year 2013---2014.<sup>1</sup> Up to \$550 million dollars are available for appropriation each year, although the annual allocation has been closer to \$350 million.<sup>2</sup>

There are three component parts of Proposition 39's energy efficiency retrofit and clean energy program, which are administered and tracked by three separate agencies.

- The K---12 program that funds retrofits and renewable energy projects in local educational agencies (LEAs) and is overseen by the California Energy Commission (CEC). The California Workforce Development Board (CWDB) is responsible for jobs reporting. This is the largest program to which, on average, over 80% of Proposition 39 funding is designated.
- The community college program, coordinated by the California Community Colleges Chancellor's Office (CCCCO), which includes both investments in retrofits and renewable energy and a small amount of training. The CCCCCO is responsible for jobs reporting.
- The Energy Corps energy survey and training program is administered by the California Conservation Corps (CCC), which is also responsible for jobs reporting.

In addition to these three components, funding has also been allocated to the CEC for administration and oversight of Proposition 39 and to the CWDB to establish pre---apprenticeship and other worker training programs. Uniting these initiatives are targeted investment into public infrastructure and the California workforce, creating jobs in communities across the state as a result.

Proposition 39 is the first clean energy policy that requires reporting, rather than forecasting of the jobs created by public clean energy investments. This will provide the most accurate jobs data to date to track the state's efforts to address climate change. It will provide data not only on the number of jobs, but also on wages and benefits, the number of apprentices who are able to fulfill some of their training through these clean energy projects, and the geographic distribution of workers, which can lend insight about the breadth of access to these jobs for workers from low---income and frontline communities. In the past, job numbers have been forecast but careful analysis that includes actual tracking of jobs has not been carried out, and no information about job quality or job access has been available.

This report maps out the steps needed to estimate the job impacts of Proposition 39, but does not yet report job creation. Currently, there is insufficient data to do so for several reasons: the program is still in its early stages, some data has not yet been reported, and disconnects between reporting systems from different agencies limit the full use of the data that is available. Instead, we provide a roadmap of

the full job impact analysis that will be possible after the first year of workforce reporting to the CEC and other administrative agencies is complete and data is linked across agencies. We examine each component program, detail the data collection and data estimation opportunities, and current data availability. We then describe how the full job impact of the K---12 program can be estimated as the complete set of first year data and subsequent annual reports become available. We do not address the other component programs under Proposition 39 given that they are not under the purview of the CWDB. To show how the data can describe job quality and job access, we also present available information on wages, opportunities for apprentices, geographic distribution of jobs, and occupational mix. Finally, we offer a rough estimate (forecast) of future job creation based on the program allocation, using a low and high estimate of jobs per million dollars of investment. We anticipate that the jobs reporting data, when available, will produce more accurate job creation numbers within this rather large forecasted range.

## THE PROPOSITION 39 JOBS UNIVERSE

Proposition 39 was created by closing a tax loophole, thus generating a significant economic multiplier effect from new money flowing into the California economy. As seen in Figure 1 below, new job creation will result from this investment through three distinct pathways. The first are “direct jobs” in clean energy implementation at K---12 schools, community colleges, and the CCC. Direct jobs are the positions designing, managing, and installing energy efficiency or renewable energy measures at LEAs – these are the planners, engineers, and white and blue collar construction workers actually involved in project implementation. For each direct job created in clean energy, there are additional “indirect jobs” created along the supply chain to meet the demand for building materials and other inputs in retrofit work and “induced jobs” in local communities in California as workers and contractors have more spending money and purchase additional goods and services. To calculate the total direct, indirect, and induced jobs created through Proposition 39 investment requires several accountancy and modelling strategies.

First, direct jobs are calculated from two distinct data sources:

- Payroll records from K---12 LEA construction projects
- Job estimation modelling

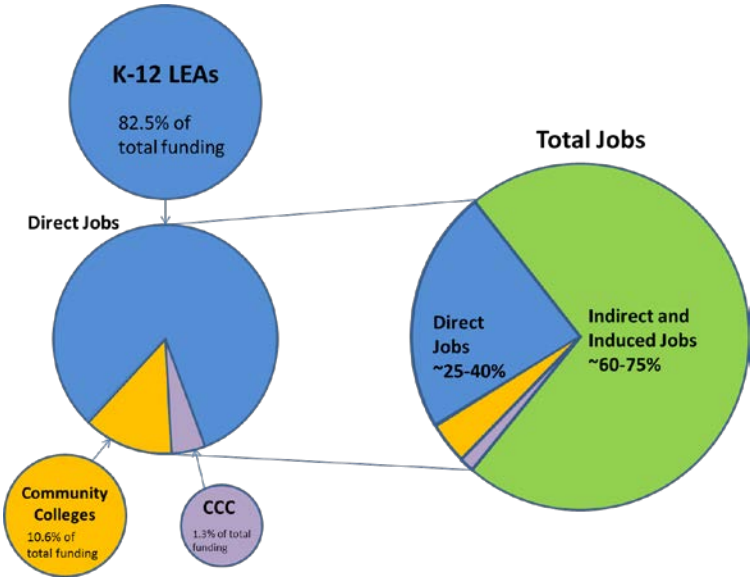
The Department of Industrial Relations (DIR) has the authority to collect certified payroll records (workers’ timecards) for all construction workers on public works projects as part of their responsibility to enforce prevailing wage law. Since Proposition 39 mandates that the CWDB report on job impacts, the DIR agreed to provide payroll records to the CWDB for each K---12 LEA. These payroll records allow us to track and tabulate actual hours worked on Proposition 39 projects for the largest group of workers (i.e. all blue collar workers who are covered by prevailing wage law). Since this data set only records blue collar construction employment in K---12 schools, some assumptions are necessary to estimate other employees engaged in K---12 school retrofit projects as well as jobs in the three other Proposition 39

programs. Based on secondary sources, it is possible to calculate a “jobs factor” for jobs created per million dollars for each program component. The gross number of jobs can then be estimated from multiplying the total project budget by the jobs factor.

For this report, we will use a range for the jobs per million dollars based on secondary sources from academic and government publications. Thus, direct jobs are counted from:

- A summation of actual blue collar construction jobs in K--12 LEAs tabulated from payroll records.
- Estimated jobs for non--blue collar construction in K--12 projects using a jobs factor from secondary literature.
- Estimated job creation in community colleges and the CCC using a jobs factor from secondary literature.
- Taking the calculated total for direct job creation, we then use a “jobs multiplier” to determine the indirect and induced jobs generated. The size of the multiplier depends upon on the industries that carry out Proposition 39 work (mostly the construction industry) and geographic area of job impact. In this case, we want to count the job impact in California, excluding jobs created in other states or nations. From secondary studies of the construction industry, we expect that the multiplier will be between 1.5 and 3, that is, for every direct job, an additional 1.5--3 jobs will be created in California.<sup>3</sup> When data is available, we will employ the IMPLAN model, a standard approach in economic impact studies, to narrow the estimate for the multiplier. It is critical to measure the multiplier as part of the jobs impact analysis of Proposition 39 because closing the tax loophole means that new investment, which would otherwise have occurred outside the state, is now generating economic activity, and jobs, in California, beyond the retrofit jobs in LEAs.

Figure 1: Investment and Direct, Indirect, and Induced Job Creation from Proposition 39



**PROPOSITION 39 K---12 PROGRAM**

The California Energy Commission (CEC) is responsible for administering the Proposition 39 K---12 program in local educational agencies (LEAs), which include over 2,100 different facilities for charter and state special schools, school districts, and the county offices of education.<sup>4,5</sup> For the first year of allocated funding only, each LEA could chose to allot a portion of their funding to planning, project design, and needs assessment.<sup>6</sup>

To date, three annual appropriations have been made to K---12 clean energy programs totaling \$973 million (for a complete breakdown of allocations by program and fiscal year from 2013 to 2016 please see Appendix). The CEC received the first energy plans in February of 2014 and as of the most recent CEC reporting date in January 2016, 697 plans have been approved for a total of \$491 million (and \$70 million in planning and design costs).<sup>7</sup> An additional 1,646 requests remain in the planning stage,<sup>8</sup> highlighting the need to distinguish between program appropriations by the Legislature and actual expenditure to date when assessing the job impacts.

**INNOVATIVE APPROACHES TO TRACKING CLEAN ENERGY JOB GAINS**

Job data from K---12 LEA projects is compiled in two distinct ways, as introduced above:

- Payroll records from the DIR, and
- Estimates based on job factors (jobs per million dollar invested) derived from previous research.

The DIR data contains information on hours but does not have information about project cost. To determine how many hours of work are created per million dollars of investment (the job factor) the DIR certified payroll records (CPRs) must be matched to CEC reports on grant disbursements to the LEAs. The DIR records also include additional information about occupation, wages and benefits, use of apprentices, and the location of workers and projects, which can be used to illustrate a more comprehensive picture of the quality of jobs associated with Proposition 39, which we discuss below.

To date, complete, matched information from both the CEC and DIR is available on only 18 LEAs, accounting for only \$5.5 million or less than 0.6% of the total program allocation. This small sample prohibits us from providing a credible estimate of job impacts because there is no way of knowing that these projects are representative of the larger pool. In fact, given their relatively small size compared to total list of Proposition 39 projects allocated funding<sup>9</sup> and their early completion, there is reason to suspect that these 18 LEAs may be exceptional or incongruous with the bulk of schools that have yet to finish reporting. The small sample is attributable to the following issues:

- **On---going projects** have not yet reported their project to the CEC so there is no way to link hours worked to project cost. As of the date of the last California Department of Education (CDE) reporting on January 19, 2016, Proposition 39 funds had been paid out to 550 LEAs;<sup>10</sup> however, only 43 projects were complete.<sup>11</sup> This is due in part to the long lead time that is necessary for careful project planning and development as well as the 12---15 months of utility data LEAs are required to report to calculate energy savings.<sup>12</sup> Additionally, many LEAs decided to save their Proposition 39 disbursement until the five---year funding allocation is complete, which is allowed, and actually encouraged under SB 73. All schools receiving more than \$1 million are to allocate not less than 50% of funding to projects over \$250,000, which are anticipated to “achieve substantial energy efficiency, clean energy, and jobs benefits.”<sup>13</sup>
- **Incomplete reporting to the DIR** limits the possible analysis of the CPRs. LEAs are required to submit payroll information to the DIR to certify prevailing wage enforcement. To date these records have only been received from 51 LEAs. The delays are attributable to a variety of factors, including the challenges of a manual reporting process unfamiliar to many and the need for further technical assistance in the field. Fortunately, the process will be automated in 2016, streamlining jobs reporting as the CPRs are submitted online.
- **Reporting schedules differ for different agencies**, which has further limited data availability so far. Once the data from the DIR is made available it must be matched to the CEC reports to provide jobs per million dollars of investment estimates. However, the CEC and DIR report at different times, meaning we are unable to match the DIR records provided in October 2015 to any projects completed after the last data set received from the CEC in August 2015.

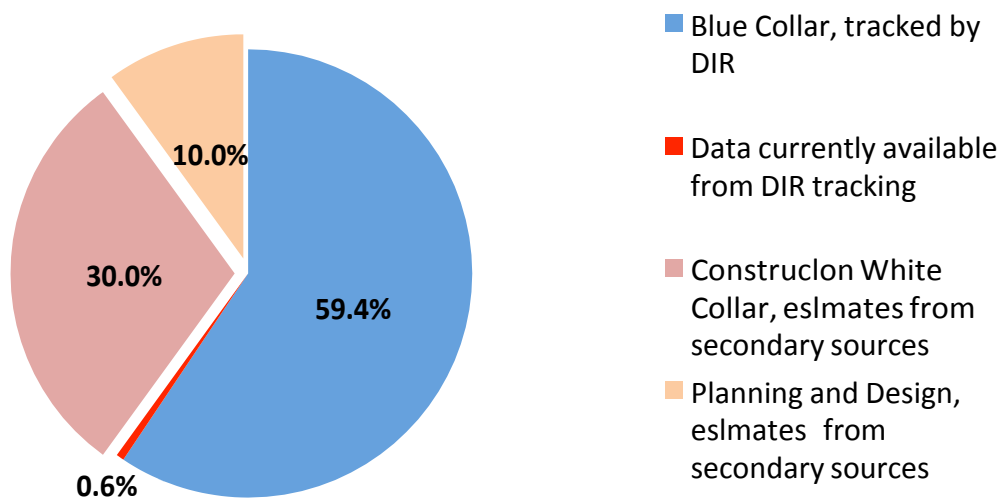
This information gap is illustrated in Figure 2, which depicts the distribution of employment across K---12 Proposition 39 project components. The small red sliver of the pie chart represents the data that matches for both hours worked and project costs – less than 0.6% of the total program allocation. As

data becomes available from the DIR and the CEC we will be able to determine the exact number of blue-collar construction positions created, filling in the entire large blue wedge.

In addition, the payroll records from the DIR do not capture other workers on Proposition 39 projects that are not covered by prevailing wage laws. In the construction industry, construction managers, contractors, engineers, and other white collar occupations ranging from architects to accountants are the major categories that are not included. Based on the tracking of blue collar construction jobs from the payroll records, we can estimate the associated white collar jobs creation from the US Economic Census of the construction industry.

In addition, the CEC allocates funds for project planning and design (permitting up to 30% of the first year of LEA funding to be used for energy project planning and auditing in preparation of program implementation). Thus, until the final data on funding allocated to planning and design is available, we estimate the jobs created in this area to account for as much as 30% of the 2013--2014 allocation of Proposition 39 funding (represented in the small, orange wedge in Figure 2).<sup>14,15</sup> The only omission from this comprehensive data collection mechanism are existing school employees who may have contributed to the planning, design, or implementation of projects and whose salaries may have been subsidized by Proposition 39 funding. We are not able to count these jobs. Nevertheless, the reporting and documentation systems established will provide a wealth of information as the CEC and DIR data is finalized, permitting the first comprehensive review of job creation and job quality from clean energy investment that can be used to forecast job growth and the impact of related clean energy initiatives into the future.

Figure 2: Job Creation Breakdown from K--12 Proposition 39 Projects





**JOB QUALITY AND ACCESS**

Proposition 39 is an investment in the clean energy workforce intended to “increase the number of jobs in California supporting energy retrofit improvements” while also providing training to build sustainable careers accessible to all interested Californians by working with a range of stakeholders, including LEAs, community colleges, the CCC, and “eligible community---based and other training workforce organizations preparing disadvantaged youth or veterans for employment.”<sup>16</sup> The DIR payroll records contain a wealth of information about the construction jobs created by Proposition 39 at K---12 LEAs that will eventually allow us to address whether these are good, career---track jobs and who is getting them.

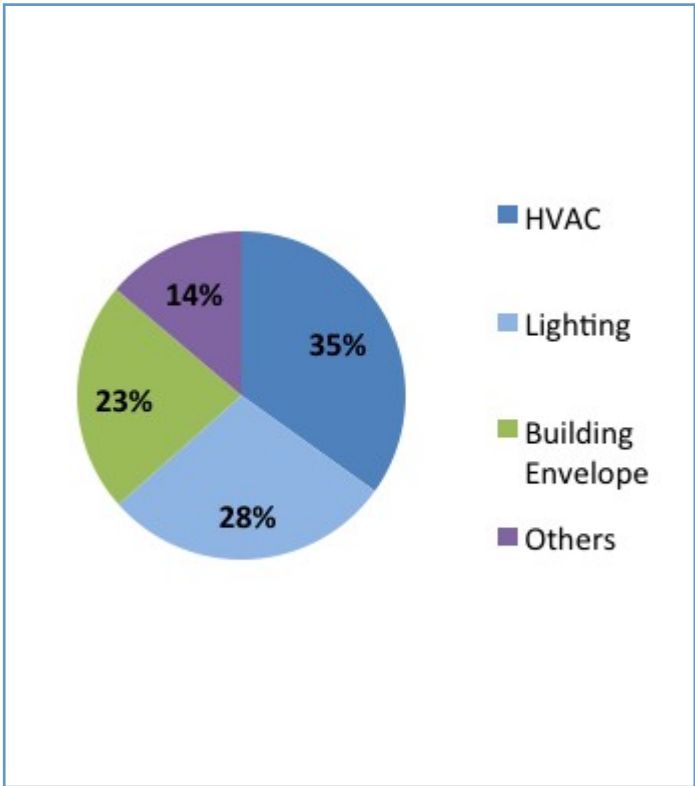
Given that these jobs are covered by prevailing wage protections, we can be assured that they are generally well---paid jobs with benefits, which rely on the apprenticeship system for training, and that many positions will be unionized. We examined the 2,200 payroll records from 51 LEAs reported by the DIR to the Donald Vial Center in October 2015, which included information on each LEA, the project site, the name of the contractor, the job classification of each worker, the hourly wage rate, the number of hours each employee worked on each project, and worker and contractor zip codes. From this dataset, we compiled an early snapshot of work undertaken at the 51 LEAs. Table 1 presents the ten largest job classifications and the relative distribution of work in them on Proposition 39 projects.

*Table 1: Total Hours Worked by Trade in K---12 LEAs*

<b>Building System</b>	<b>Job Category</b>	<b>Hours</b>
<b>HVAC</b>	HVAC Employees	2%
	Plumbers/Pipefitters	15%
	Sheet Metal workers	18%
<b>Lighting</b>	Electricians	20%
	Light Fixture Employees	8%
<b>Building Envelope</b>	Asbestos Workers	15%
	Carpenters	3%
	Glaziers	4%
	Roofers	1%
<b>Others</b>	All other workers (e.g., laborers, sound technician, system installer, etc.)	14%

Figure 3 shows the occupational breakdown and the corresponding building system, which underscores the importance of heating, ventilation, and cooling (HVAC) installation, lighting, and improvements to the building envelope to address energy efficiency (see note 5 for more information on types of energy efficiency work).

Figure 3: K-12 LEA Proposition 39-Funded Projects



The CPR data also indicates that Proposition 39 provides career-track training for construction workers through state-registered apprenticeships. Apprenticeships are industry-funded, “earn-as-you-learn” training programs that combine classroom instruction and paid on-the-job-training with a wage progression tied to skill acquisition and an industry-recognized credential when apprentices “journey out.”<sup>17</sup> State-certified apprenticeships are the gold standard in workforce training and trade certification,<sup>18</sup> building a pipeline for trainees into career track jobs, and helping to fulfill the intent of the legislation. Information on the zip codes of workers will help determine whether local community members or workers from disadvantaged communities have been hired. Proposition 39 does not include specific goals for hiring workers from targeted groups, even though this has become a fairly common feature of public works projects where Project Labor Agreements have been negotiated.

From the CPR data, we identified apprentice and non-apprentice/journey-level workers employed on Proposition 39 projects in K-12 LEAs. Of the seven major job classifications represented in our data, five trades hired apprentices (electricians, sheet metal workers, plumbers/pipefitters, carpenters, and others) while two (light fixture employees and asbestos workers) did not. Among the trades that did hire apprentices, we see a healthy ratio of nearly one apprentice to every four journeymen.<sup>19</sup> Figure 4 depicts this breakdown by trade to show the prominence of apprentices in the skilled trade workforce.

As seen in Table 2, apprentices earn a good salary while completing three to five years of training that teaches a broad, occupational skillset applicable to other sectors and projects. The intensive educational program is supplemented with work in a range of settings that provides greater job security in the future as workers earn a versatile, industry-recognized credential. In contrast, the light fixture installers and asbestos/lead abatement workers learn only very specific skills applicable to one aspect of energy efficiency and lack the versatility of skilled journeymen. These jobs may lack a clear pipeline to a higher-wage career.

Figure 4: Comparison of Workforce Apprentice vs. Non-Apprentice Ratio across the seven-largest trades in K-12 LEA Proposition 39 projects.

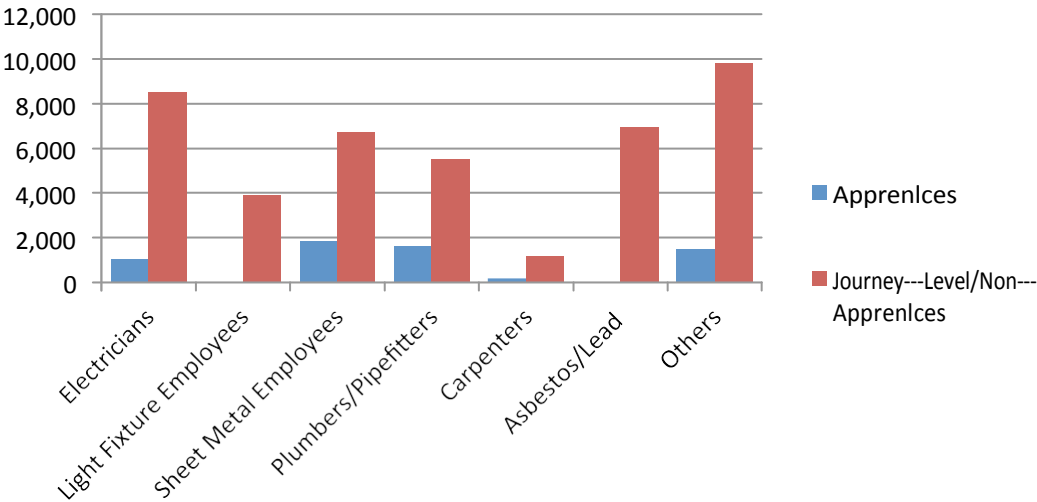


Table 2: Average Hourly Wage by Trade for Apprentices and Journey-Level/Non-Apprentices on K-12 LEA Projects

Job Category	Apprentices	Journey-Level/ Non-Apprentices
Electricians	\$30	\$53
Light Fixture Workers	-	\$36
Sheet Metal Workers	\$26	\$49
Plumbers/Pipefitters	\$27	\$49
Carpenters	\$30	\$43
Asbestos/Lead Abatement Workers	-	\$30
Other	\$24	\$45

Although there is a clear distinction in the average wages associated with industries that use the apprenticeship system (\$49 per hour) versus those that are not (\$33 per hour), all employees on K--12 LEAs receive wages higher than the workforce average as public funding triggers prevailing wage standards. Thus, investment into public infrastructure under Proposition 39 creates a ripple effect of associated benefits. Improved energy efficiency investment not only contributes to student and employee comfort, lower building maintenance and operating costs, and an extended lifetime for school buildings,<sup>20</sup> but also provides family--supporting wages for construction workers and training programs that establish a pathway to middle class careers for apprentices.

Furthermore, these benefits extend across the state of California as captured in Figure 5. The bubbles correspond to LEAs that have completed a project and reported their payroll records to the DIR (although the CEC reporting is not necessarily complete for all LEAs marked). The map evidences a clear distribution of program monies in projects across the state. Once more data is available, we will also be able to assess the proportion of workers who come from zip codes identified in the CalEnviroScreen as likely to be disadvantaged.<sup>21</sup>

Figure 5: K--12 LEAs projects that have reported to the DIR:



*These projects are not all complete, and thus not yet included in this report’s jobs reporting analysis. However, the dots represent the zip codes which contain an LEA that has at least started their project and submitted payroll records to the DIR. Some of the LEAs are in the same zip code.*

## OTHER KEY PROPOSITION 39 PROGRAMS

Proposition 39 funds related clean energy programs in the community colleges and the California Conservation Corps. Although different agencies are responsible for reporting the direct job gains from these programs, it is important to consider them as they contribute to the total job creation forecast in the final section of this report.

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### CALIFORNIA COMMUNITY COLLEGES

The second largest program of Proposition 39 is the community college initiative, which was allocated \$124.7 million between 2013 and 2016 (see Appendix) for both clean energy projects and workforce development programs in the clean energy sector.<sup>22</sup> Proposition 39 mandates that community college districts collect and provide the CCCCCO with information regarding their final project costs, verified energy savings for each project, direct job creation, and number of trainees. Reporting on community college job gains is carried out separately by the CCCCCO. Their October 2015 report detailed 135 completed projects resulting in 174 full-time equivalent job years and another 458 projects underway, which are estimated to create a further 487 job years.<sup>23</sup>

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### CALIFORNIA CONSERVATION CORPS

Proposition 39 created the Energy Corps Program under the California Conservation Corps to train at risk young people.<sup>24</sup> Beginning in fiscal year 2013, the CCC has received approximately \$5 million annually to train Corps members to conduct energy surveys and, in some cases, install simple energy efficiency retrofit measures for K-12 LEAs.<sup>25</sup> The Corps works statewide with priority given to smaller LEAs and those with a high percentage of students qualifying for free and reduced lunch. In 2014, the 10 crews of the Energy Corps Program surveyed over 7,800 school buildings and provided the CEC with 116 Energy Opportunity Survey reports.<sup>26</sup> The CCC tracks Corps member hours and, if linked with their project tracking data, could estimate the number of jobs per million dollars of investment.

## FORECASTED JOB CREATION

The benefit of the data collection mechanism used for jobs reporting in K-12 LEAs is that we can track actual hours of work from actual payroll data for the single largest category of workers funded through Proposition 39. This provides an anchor of reality for the estimates required for the other job categories that do not report payroll records. Once CPR data is available, it will allow us to produce the most accurate estimates possible and shed light on the job quality and job access issues that are also of concern.

For this report, we provide “back-of-the-envelope” forecasts of potential job creation based on allocated Proposition 39 funding from 2013–2016 using job factors and job multipliers from previous studies. Once the real data is available, we can assess how accurate previous job forecasts have been.

Table 3 presents job creation estimates based on three distinct job factors. This very large range highlights the need for careful accounting and verification. The range of job outcomes presented is based on a review of academic and government analyses that indicate a low job factor estimate of 2.5 direct jobs created per million dollars invested and an upper-bound estimate of 8.9 direct jobs created per million dollars. The low estimate uses a multiplier of 1.5 indirect and induced jobs created for each direct job and the high estimate uses a multiplier of three, again derived from other research.<sup>27,28</sup> The total jobs estimate forecasts direct blue collar and white collar employment on Proposition 39 projects, indirect jobs created along the supply chain, and induced jobs in local communities. The midpoint in the range described as the “DVC Jobs Forecaster” uses a job factor of 6.2 and a multiplier of 2.3 based on a 2013 report from the Donald Vial Center on Employment in the Green Economy at the University of California, Berkeley.<sup>29</sup> This report averaged the findings of the academic and government studies mentioned above following from a comprehensive review of literature on job creation in the clean energy sector.

Based on the total allocation to K–12 LEAs, community colleges, and the CCC, we calculate a low job creation estimate of 6,963, a mid-point based on the DVC Job Forecaster is 15,878 with the highest forecasted estimate for total jobs being 39,640. This broad range calculated from various studies illustrates the uncertainty of job forecasting and the importance of grounding job outcome numbers in real data as the unique data collection strategies employed in K–12 LEAs will allow.

*Table 3: Forecasted Potential Job Creation from Proposition 39*

		Low Estimate			DVC Jobs Forecaster			High Estimate		
	Total Allocated Funding	Jobs per Million	Forecasted Direct Jobs	Total Jobs	Jobs per Million	Forecasted Direct Jobs	Total Jobs	Jobs per Million	Forecasted Direct Jobs	Total Jobs
K–12	\$973.4	2.5	2,434	6,085	6.2	6,035	13,881	8.9	8,663	34,652
Community Colleges	\$124.7		312	780		773	1,778		1,110	4,440
CCC	\$15.4		39	98		95	219		137	548
<b>Total</b>	<b>\$1,113.5</b>		<b>2,784</b>	<b>6,963</b>		<b>6,903</b>	<b>15,878</b>		<b>9,910</b>	<b>39,640</b>

## CONCLUSION

Proposition 39 is a significant investment into clean energy and energy efficiency in California that creates multiple, positive benefits of lower energy bills, greater comfort in educational facilities, reduced greenhouse gas emissions, job training, and job creation. Since the program was established in 2013, \$973 million has been allocated and \$212 million disbursed to clean energy projects in K--12 LEAs across the state in addition to the projects with community colleges, the CCC, CWDB, and CEC.

We are still at the early stages of project implementation, making it impossible to provide a credible job creation estimate for K--12 LEAs from the small sample currently available. However, the data collection mechanism established, which links payroll records from the Department of Industrial Relations and project reporting from the California Energy Commission, will allow us to tabulate actual job creation in blue collar construction on projects in K--12 LEAs across the state as reporting continues. From this, we can calculate white collar and planning jobs in the K--12 LEAs and job creation of the other programs using a new, estimated jobs factor (jobs per million dollars of investment) that is grounded in real data from the DIR. This robust data collection method will also provide information on the quality of jobs created, the wages and benefits paid, who is working in LEAs, and the opportunities open for trainees on Proposition 39 projects, allowing us to understand better if the program is achieving its educational goals to train disadvantaged and veteran workers across the state.

Our forecast for potential job creation based on secondary literature shows a vast range that extends between 7,000 and nearly 40,000 jobs created from Proposition 39. For the first time, we will be able to verify these predictions as we narrow and refine the jobs factor for clean energy projects using the methodology outlined in this report. Thus equipped, we will better be able to explain the labor force impacts of on--going and future climate legislation, aid with future economic development initiatives, and help to plan for education and training of a new generation in the clean economy workforce.

APPENDIX

**Appropriation of Proposition 39 (Clean Energy Job Creation Fund) Funding<sup>30</sup>**

<b>Program Administrator</b>	<b>Fiscal Year 2013/14 (in millions)</b>	<b>Fiscal Year 2014/15 (in millions)</b>	<b>Fiscal Year 2015/16 (in millions)</b>
<p><b>California Energy Commission/ California Department of Education (CDE)</b></p> <p><i>K---12 program (Amounts received by local school districts vary based on a formula of average daily attendance and the number of students eligible to receive free and reduced--- price meals in the school year.)Funding is dispersed by CDE, with program implementation and funding approvals through the Energy Commission.</i></p>	\$381	\$279	\$313.4
<p><b>California Community College Chancellor’s Office</b></p> <p>Community College District program for energy efficiency and clean energy generation projects.</p>	\$47	\$39	\$38.7
<p><b>California Energy Commission</b></p> <p>Energy Conservation Assistance Act --- Education Subaccount (<i>No---interest revolving loan program for K---12 schools and community college districts.</i>)</p>	\$25.2	\$25.2	\$0
<p>Bright Schools program</p> <p><i>(Energy audits and other technical assistance for K---12 schools.)</i></p>	\$2.8	\$2.8	\$0
<p><b>California Workforce Development Board</b></p> <p>Develop and implement a competitive grant program for eligible workforce training organizations to prepare disadvantaged youth, veterans, and others for employment in clean energy fields.</p>	\$3	\$3	\$3
<p><b>California Conservation Corps</b></p> <p>Provide energy project planning services.</p>	\$5	\$5	\$5.4
<b>TOTALS</b>	<b>\$464</b>	<b>\$354</b>	<b>\$360.5</b>



## NOTES

<sup>1</sup> Senate Bill No. 73. (2013). Chapter 29. Retrieved From: [http://www.leginfo.ca.gov/pub/13---14/bill/sen/sb\\_0051-0100/sb\\_73\\_bill\\_20130627\\_chaptered.pdf](http://www.leginfo.ca.gov/pub/13---14/bill/sen/sb_0051-0100/sb_73_bill_20130627_chaptered.pdf)

<sup>2</sup> California Energy Commission. (2015). The California Clean Energy Jobs Act: Proposition 39. Retrieved: [http://www.energy.ca.gov/renewables/tracking\\_progress/documents/Prop\\_39\\_Tracking\\_Progress.pdf](http://www.energy.ca.gov/renewables/tracking_progress/documents/Prop_39_Tracking_Progress.pdf)

<sup>3</sup> The job multiplier effect is generally estimated between 2 and 4 indirect and induced jobs for each direct job created and can vary significantly based on the sector and geography of new jobs. The National Renewable Energy Laboratory estimates indirect and induced job creation for various clean energy occupations in the “Jobs and Economic Development Impact (JEDI) model for clean energy installation based on the IMPLAN platform that examines macroeconomic flows in the Economic Census of the US Census Bureau. See: National Renewable Energy Laboratory. (2015). Jobs and Economic Development Impact Models: Methodology. Retrieved from: <http://www.nrel.gov/analysis/jedi/methodology.html>

<sup>4</sup>The number of eligible LEAs will vary slightly each year due largely to changes in charter schools, many of which are housed in rented facilities that may not be eligible for funding or pose a much higher barrier to the cost effectiveness metric for a project. As of the 2015, there were 2,136 eligible LEAs across the state. See: California Energy Commission. (2016). California Clean Energy Jobs Act: Proposition 39 (K---12) Program Snapshot. Retrieved from: [http://www.energy.ca.gov/efficiency/proposition39/documents/Prop\\_39\\_Snapshot.pdf](http://www.energy.ca.gov/efficiency/proposition39/documents/Prop_39_Snapshot.pdf) and California Energy Commission. (2015). Guidelines Proposition 39: California Clean Energy Jobs Act – 2015 Program Implementation Guidelines. Retrieved from: <http://www.energy.ca.gov/2014publications/CEC---400---2014---022/CEC---400---2014---022---CMF.pdf>

<sup>5</sup> To access funding, LEAs must submit an energy expenditure plan, which is reviewed by the CEC and funding is dispersed on a per student basis to LEAs. Example projects include measures such as:

- Efficient lighting and lighting control systems.
- Heating, ventilation, and air---conditioning (HVAC), such as new chillers, boilers, and furnaces
- Building envelope measures such as insulation or window and door treatment/replacement
- Pumps, motors, and variable frequency drives.
- Energy management systems, programmable/“smart” thermostats, and chiller controls.
- Plug---load equipment, such as power management and vending machine misers.
- Building envelope energy---saving measures.
- On---site clean energy generation, such as solar photovoltaic.

<sup>6</sup> LEAs are also able to (1) apply for single or multi---year energy expenditure plan(s) (2) retroactively fund measures, and (3) accumulate Proposition 39 funds over five years to finance an expanded EEP or across multiple school sites within the LEA. Funding is distributed as it become available each fiscal year. If not used completely, the allocated funding will be available until June 2018 at which time LEAs have two additional years to complete their energy plans and another year to report final project completion by June 30, 2021. For more see: California Energy Commission. (2015). The California Clean Energy Jobs Act (Proposition 39 (K---12) Program).

<sup>7</sup> California Energy Commission. (2016). Approved Energy Expenditure Plans: Expenditure Plan Listing. Retrieved from: <http://www.energy.ca.gov/efficiency/proposition39/>

<sup>8</sup> California Energy Commission. (2015). The California Clean Energy Jobs Act: Proposition 39. Retrieved from: [http://www.energy.ca.gov/renewables/tracking\\_progress/documents/Prop\\_39\\_Tracking\\_Progress.pdf](http://www.energy.ca.gov/renewables/tracking_progress/documents/Prop_39_Tracking_Progress.pdf)

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<sup>9</sup> California Department of Education. (2016). Proposition 39 ----- Multi---year Schedule. Retrieved from: <http://www.cde.ca.gov/fg/aa/ca/prop39ccej.asp>

<sup>10</sup> California Department of Education, 2016.

<sup>11</sup> The 43 complete projects are based on the data for analysis that was provided to the Donald Vial Center from the CEC on August 31, 2015.

<sup>12</sup> Senate Bill No. 73, 2013

<sup>13</sup> Senate Bill No. 73, 2013, p. 96

<sup>14</sup> California Energy Commission, 2015, page 13

<sup>15</sup> The breakdown of white collar versus blue collar jobs is modelled from two major sources, the first being the US Economic Census for California which records average employment trends in construction (see: United States Census Bureau. (2015). Construction. Retrieved from: <http://www.census.gov/econ/construction.html>). The second method is IMPLAN, a commonly used economic model originally designed by the federal government for examining the flow of resources between different professions, regions, and economic sectors. The job factor estimators from this model indicate slightly higher job gains for planning and administration funding as a smaller proportion of the gross investment is devoted to materials. When more information on the breakdown of investment becomes available from the Department of Education, we will input the information into IMPLAN, which will illustrate direct job gain in California, indirect job gain external to the state and along the material supply chain, and induced job growth in local communities. The information input into the IMPLAN model will also include the funding allocated to the California Workforce Development Board and the California Energy Commission. Job creation in administration of the program and workforce training is not currently being tracked, but can be estimated.

<sup>16</sup> Senate Bill No. 73, 2013

<sup>17</sup> Department of Industrial Relations. (2016). Overview of DAS. Retrieved from: [https://www.dir.ca.gov/das/DAS\\_overview.html](https://www.dir.ca.gov/das/DAS_overview.html) and Philips, P. (2014). Environmental and Economic Benefits of Building Solar in California: Quality Careers, Cleaner Lives. Donald Vial Center on Employment in the Green Economy. Retrieved from: <http://irle.berkeley.edu/vial/publications/building---solar---ca14.pdf>

<sup>18</sup> Zabin, C. et al. (2014). Workforce Issues and Energy Efficiency Programs: A Plan for California's Utilities. Donald Vial Center on Employment in the Green Economy, University of California, Berkeley. Retrieved from: <http://www.irle.berkeley.edu/vial/publications/WET---Plan14.pdf>

<sup>19</sup> Notably, this number is higher than the trainee employees reported by the community colleges, which find a ratio of one apprentice to every 40 jobs forecasted. See: California Clean Energy Jobs Act, 2015, page 41

<sup>20</sup> Irwin, J. et al. (2011). Making M.U.S.H. Energy Efficient. Center on Wisconsin Strategy. Retrieved from: <http://www.cows.org/making---mush---energy---efficient>

<sup>21</sup> The CalEnviroScreen is now able to assess the relative disadvantage of communities in a more fine---grained manner by looking at census tract data, although the DIR data reported to the CWDB includes only zip code. Still, this zip code data provides the best available way to assess job access. See: Office of Environmental Health Hazard Assessment. (2015). CalEnviroScreen Version 2.0. Retrieved from: <http://oehha.ca.gov/ej/ces2.html>

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<sup>22</sup> California Community Colleges Chancellor's Office. (2016). Proposition 39: Clean Energy Jobs Act of 2012. Retrieved from: <http://extranet.cccco.edu/Divisions/FinanceFacilities/Proposition39.aspx>

<sup>23</sup> CCCCO: Facilities Planning and Utilization. (2015). Citizens Oversight Board Proposition 39 Summary Report. Retrieved from: [http://www.energy.ca.gov/efficiency/proposition39/citizens\\_oversight\\_board/documents/2015---01---12\\_CCCCO\\_Report.pdf](http://www.energy.ca.gov/efficiency/proposition39/citizens_oversight_board/documents/2015---01---12_CCCCO_Report.pdf)

<sup>24</sup> California Conservation Corps. (2014a). California Conservation Corps --- Energy Corps Program --- Version 7.0. Retrieved from: [http://www.green---technology.org/gcschools/images/CCC\\_Energy\\_Corps.pdf](http://www.green---technology.org/gcschools/images/CCC_Energy_Corps.pdf)

<sup>25</sup> California Conservation Corps. (2014b). CCC Energy Corps. Retrieved from: <http://www.ccc.ca.gov/work/programs/prop39/Pages/default.aspx>

<sup>26</sup> California Conservation Corps, 2014a

<sup>27</sup> See note (ii) above for explanation of induced and indirect job creation estimation.

<sup>28</sup> Goldman, C. et al. (2010). Energy Efficiency Services Sector: Workforce Size and Expectations for Growth. Lawrence Berkeley National Laboratory. Retrieved from: <https://emp.lbl.gov/sites/all/files/REPORT%20bnl---3987e.pdf>

<sup>29</sup> Zabin, C. and Scott, M. (2013). Proposition 39: Jobs and Training for California's Workforce. Donald Vial Center on Employment in the Green Economy. Retrieved from: [http://www.irle.berkeley.edu/vial/publications/prop39\\_jobs\\_training.pdf](http://www.irle.berkeley.edu/vial/publications/prop39_jobs_training.pdf)

<sup>30</sup> California Energy Commission, 2015, p.3