PG&E Career Connections

Implementation Plan

Draft

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Program Overview

California aspires to create a well-trained, highly skilled energy workforce to help the state achieve its ambitious GHG reduction goals. Ensuring people have access to information, training, services, and support to overcome disadvantages and find good jobs in a clean energy economy is key to achieving these goals.

To help build the next generation of energy workers, The Energy Coalition (TEC) proposes a K-12 workforce, education, and training (WE&T) strategy that will build a pipeline of skilled energy workers; achieved by opening energy education pathways for students. Target participants will focus on students in Hard-to-Reach (HTR) households and disadvantaged communities (DAC). The program supports all Career Connections (CC) desired outcomes and the future portfolio vision laid out in the IOUs' Business Plans.

TEC's *Energy is Everything (EisE)* Career Pathways K-12 program integrates with and builds on the accomplishments and insights gained from its highly successful statewide WE&T K-8 Connections program.

Program Budget and Savings

Program and/or Sub-Program Name

Energy is Everything (EisE)

Program / Sub-Program ID number

SW_WET_CC

Program / Sub-Program Budget Table

	2021	2022	2023	2024	2025	Total
Administration	$ 5,800	$10,000	$10,000	$10,000	$3,510	**$39,310**
Marketing/ Outreach	$50,200	$50,000	$50,000	$50,000	$0	**$200,200**
Direct Implementation	$29,000	$940,000	$940,000	$940,000	$5,490	**$2,854,490**
Total	**$85,000**	**$1,000,000**	**$1,000,000**	**$1,000,000**	**$9,000**	**$3,094,000**

Program / Sub-Program Gross Impacts Table

Not applicable for this program

Program / Sub-Program Cost Effectiveness (TRC)
Not applicable for this program

Program / Sub-Program Cost Effectiveness (PAC)
Not applicable for this program

Type of Program / Sub-Program Implementer
Third Party-Delivered

Market Sector
Cross-cutting (WE&T)

Program / Sub-Program Type
Non-resource (Market Support)

Market Channel(s) and Intervention Strategies
Statewide, Downstream

Implementation Plan Narrative

Program Description
TEC will provide services and products to serve Energy Educators and their students from identified local education providers. Program component design minimizes gaps and aligns energy efficiency (EE) education, training programs, and workforce demands. The services also provide indirect benefits such as improved behavioral norms, energy savings, and awareness for local education providers, community-based organizations (CBOs), students' families, and communities. TEC will implement the following strategies:

- Leverage and expand train-the-trainer professional development training (PDT), conducted online or in-person, for educators to build confidence and experience in energy/STEM subjects and ensure long-term instruction;
- Utilize and expand adaptable, modular subject matter by grade, topic, and objective to allow for flexible integration into instruction and to meet demands for distance learning;
- Maximize access to services through multilingual materials (printed and online) for educators, students, and their families;
- Utilize and further develop family-facing materials through coordination with EE-funded residential programs to support pro-environmental behaviors and energy savings, moving beyond education sites and into students' homes and communities;
- Maintain statewide delivery through distance learning platforms, TEC's statewide offices, Field Educators, Program Ambassadors, and Energy Fellows;

- Enroll and retain educators through direct marketing to educators and local education providers and indirect marketing through peer-to-peer referrals and engagement materials;
- Overcome traditional barriers to serving disadvantaged local education providers through key partnerships and enhanced services to meet the unique needs of these students;
- Leverage TEC's robust Field Educator network to engage hundreds of partner "educators in training" at CSUs, UCs, and CCCs who support cost-effective on-site and virtual instruction while gaining on-the-job training, and;
- Engage Climate Corps AmeriCorps (CCAC) Energy Fellows strategically placed in DAC/HTR/rural areas across the state at County Offices of Education (COE), school districts, and with CBOs to cost-effectively support local implementation.

Proposed Deliverables

TEC brings comprehensive, products, processes, and materials to implement the program, including:

- EisE's peer-reviewed, standards-aligned, modular, multilingual **IDSM energy lessons, activities, and hands-on toolkit materials** for K-12 students;
- In-person and virtual learning, **engagement and training materials** and platforms (Google Classroom/Sites, Schoology, Blackboard, etc. for educators and students);
- **Onsite hands-on visits, demonstrations, career and science fairs**, etc., for K-12 students delivered by TEC staff, Field Educators, program ambassadors, and CCAC Energy Fellows;
- **Field trips** and hands-on activities for K-12 students to local IOU energy-education centers, EE industry experiential learning sites, and others as appropriate;
- K-12 **student and educator behavior-focused EE action campaigns** designed to save energy at school, at home, and in the community through tangible actions;
- **Energy career professional exposure** for K-12 students through presentations and video profiles provided by industry professionals, and;
- Accredited, relevant **professional development training** (in-person and online) for formal and informal educators.

In addition, TEC will continue to work with established partners to develop and launch the following technical skill development products:

- **Career Technical Education (CTE)** for 9th - 12th-grade students, providing industry-based skills for energy careers;
- **Technical skill certifications** for 7 - 12th-grade students to gain technical skills and learn about energy career pathways, and
- **Internships** for 11th and 12th-grade students that provide real-life career experiences and pathways to employment.

EisE implementation is enhanced with the support of partners, including district offices, county

offices of education, education resource centers, science and environmental education networks, and CBOs. Partners, along with **Field Educators** and **Energy Fellows**, provide resources, support program success, and enable EisE to reach more students at a lower cost.

Proposed Goals

EisE goals to develop the next generation of energy workers are:

- Raise awareness and exposure to high-value energy career pathways for K-12 disadvantaged students;
- Prepare students with the necessary knowledge, skills, and abilities (KSA) related to Integrated Demand Side Management (IDSM) subjects to attain and retain energy college and career opportunities;
- Provide high-quality, flexible, professional development training to boost educator experience and confidence in energy and Science, Technology, Engineering and Mathematics (STEM) topics, and;
- Inspire students to adopt sustainable, pro-environmental behaviors.

Program Delivery and Customer Services

Geographic Reach

EisE will serve K-12 populations statewide, targeting local education providers within all four IOU service areas. TEC has identified counties to target for participation through a comprehensive statewide market analysis that reviewed socioeconomic, geographic, and economic factors related to energy education and workforce services in California. TEC aims to focus (but not limit) recruitment in the following counties: Alameda, San Francisco, San Mateo, Contra Costa, San Joaquin, Merced, Los Angeles, San Bernardino, Riverside, Imperial, and San Diego.

TEC covers all major urban and numerous rural counties in California. TEC will leverage its significant virtual presence and regional partnerships, including Field Educators and Energy Fellows, to facilitate the sharing of and implementation of curriculum, professional development, and communication to reach geographically remote populations and allow for flexible participation.

There are no differences in program activities or strategies proposed by geographic region. EisE staff work with local education providers to customize program materials to address local requirements and unique needs.

Program Design and Best Practices

Intended Program Audience

The EisE program audience is TK-12 students within all four IOU service territories, and formal and informal educators who reach students in and out of the classroom.

It is essential to reach as many students as possible regardless of setting to build a robust pipeline of future energy workers. EisE enrolls formal and informal educators to maximize the number of students reached in and out of the classroom. In addition to K-12, EisE has developed curricula and resources for transitional kindergarten (TK) because early exposure to career pathways increases the odds students will pursue energy careers.

EisE will recruit educators across all grade levels to ensure an equitable and wide range of students participating in the program. TEC recommends dividing students served across the IOU service territories based on demonstrated need, population, geographic territory, market gap analysis insight, and discussions with PG&E.

Differences in Planned Type, Depth, or Length of Participant Engagement

All students receive a minimum of 5 hours of lessons, hands-on activities, and experiential learning opportunities that build skills and increase career awareness and job readiness, appropriate to each grade level. Middle and high school students have access to additional technical skill development resources, including internships, CTE for college credits, and certification programs. All enrolled educators receive a minimum of 2 hours of professional development training online or in-person during onboarding, with opportunities for additional professional development for additional skill and confidence development.

Barriers and Motivators for Program Participation

EisE overcomes students' barriers. Many students from disadvantaged communities may be inexperienced in distance (virtual) learning. The National Center for Education Statistics' National Assessment of Educational Progress (NAEP) for eighth-graders data shows that "full access to online learning is far from universal and that students who are poor are less likely to have access to the key tools and experiences they need to attend school online;"[1] because of this, EisE offers easy-to-implement lessons. Students from disadvantaged communities may not have access to high-speed internet at home; EisE will print and ship materials to local education providers. Student's ability to learn and work independently varies by grade level; lesson design for younger students (grade K-2) is educator-led, and lessons for older students (grade 3-12) encourage independent learning. Because students have varying proficiency in English, all

[1] Emma García, Elaine Weiss, and Lora Engdahl, "Access to Online Learning amid Coronavirus Is Far from Universal, and Children Who Are Poor Suffer from a Digital Divide," Working Economics Blog (Economic Policy Institute, April 17, 2020), https://www.epi.org/blog/access-to-online-learning-amid-coronavirus-and-digital-divide/.

student and family-facing materials are available in Spanish and English.

In TEC's experience, students and educators are highly motivated to participate and share what they learn. Student evaluations show that 56% of students are likely to share what they learn in class with friends and family. Instructional materials incorporate different learning styles, and the inquiry-based, hands-on application of theory keeps students engaged. Two recent studies showed greater retention and higher test scores from students who participated in hands-on learning.[2] Students solidify learning through phenomena-based experiential activities where students learn about careers and find tangible ways to make a difference in their households and communities.

EisE understands and addresses the many challenges and barriers that educators face. Because educators have limited time and resources, EisE's designs professional development training, turnkey curriculum, and activities. EisE's modular design enables educators to supplement or substitute lessons to fulfill state requirements and mandates. Because levels of teaching experience vary, EisE lesson design accommodates for variations in teaching experience. Budget constraints can be a significant barrier. EisE provides lessons, toolkits, training, and resources at no cost to educators. EisE's alignment with state standards, turnkey implementation, ease of use, access to resources, modular design, real-time support from staff and trainers, and customizable tools and templates make EisE highly attractive to educators and motivate them to enroll in the program.

Innovation

EisE includes several unique and innovative program elements that enhance program effectiveness.

Field Educators and Energy Fellows. Through a robust network of partners, participants, Energy Fellows, Field Educators, and other stakeholders, TEC has established a significant presence in all four IOU territories. TEC pioneered an innovative strategy to recruit and train student teachers as **field educators**. In partnership with California universities, college-aged students and adults new to the workforce earn credit, fieldwork hours, observation hours, and on-the-job training while supporting EisE local education providers. Field educators are empowered through training and shadowing activities to conduct Lab Day lessons in the classroom and support field experiential learning activities. TEC recruits individuals from CCAC as **Energy Fellows** who work closely with TEC staff to support program implementation as program advocates for geographically isolated, disadvantaged communities. Fellows receive on-the-job training, workforce training, and skills development while enhancing EisE offerings. They form a pipeline of trained future educators prepared to deliver energy education and career development to others.

[2] Jonathan Arnholz, "Is Hands-on Learning Better?," Build Your Future (Build Your Future , February 12, 2019), https://byf.org/is-hands-on-learning-better/.

Technical Training. To better prepare high school students for energy careers and opportunities, EisE facilitates **Career Technical Training** (CTE) focused on energy careers. Through articulation agreements with community college partners, EisE enables high school students to earn **community college credit** and develop technical career skills through hands-on learning. EisE will develop courses to establish clear pathways to energy-focused post-secondary education and careers.

EisE also provides experiential career learning through a certification program for middle and high schools students. Students learn how to conduct water and energy audits in their homes, communities, and schools to become **certified Junior Energy Managers**.

1 Million Energy Actions (1MEA) Campaign. Students learn to think about and use energy differently through behavior-based energy action campaigns that extend beyond the classroom. 1MEA is a stimulating engagement campaign that teaches students about energy concepts and connects what they learn with energy actions at home and in their communities. The campaign engages energy educators, students, and families through an interactive website where students take pledges, answer trivia, complete a home energy audit, and track their daily energy use. Regular social media posts engage followers by highlighting EE, DR, and DG-related fun facts and calls to action. Educators also receive the 1MEA newsletter monthly, with the latest actions to participate in the campaign.

Distance Learning. EisE's abundant virtual offerings allow flexible delivery in even the most remote locations across the state. TEC understands the challenges of virtual learning and has adapted its curricula to support educators' ability and confidence to teach online. EisE's suite of virtual learning tools is particularly relevant and timely given the challenges of COVID-19. The increasing needs of educators, parents, and students for effective virtual learning tools, resources, and training makes EisE's distance learning strategy attractive and boosts interest and participation in the program.

Modular Design. Through a train-the-trainer model, TEC delivers critical STEM content and professional development to educators at their pace, allowing for flexible integration into core studies, ready-to-go distance learning, and an adaptable, **modular curriculum**. Through a modular design, lessons align by topic with project-based learning consistent with grade-level requirements. Educators can integrate standards-aligned content seamlessly into their lesson planning, allowing educators to work at their own pace and apply the curricula in ways that fit their own and their students' needs.

Metrics

Proposed Outcomes

- Number of energy educators that received and utilized educational resources (for CC)
- Number of students enrolled (for CC)

- Number of students provided with career awareness/experience (for CC)
- Number of local education providers served (for CC)
- Minimum number of formal local education providers served (for CC)
- Number of disadvantaged local education providers served (for CC)
- Partnerships established
- Verified student instruction and training hours

Key Performance Indicators

- Energy educator enrollment
- Student enrollment
- Local education provider
- Disadvantaged local education providers
- Partnerships established
- Verified student instruction & training hours
- Educator knowledge gain
- Student knowledge gain
- Student interest in energy careers
- Behavior metrics
- Program satisfaction

For Programs Claiming To-Code Savings

This section is not applicable to the EisE program.

Pilots

This section is not applicable to the EisE program.

Workforce Education and Training

EisE develops students' academic, technical, and employability skills by integrating energy concepts and hands-on skill development. For example, fourth graders gain career awareness and readiness by learning about electricity, applying it by making a motor (using the EisE toolkit), and then reinforcing it with a field enrichment experience, such as meeting career professionals. High school students gain technical skills to prepare them for high-demand[3], high-opportunity jobs through college course credit, internships, or becoming certified junior energy managers. EisE focuses on IDSM related careers that fulfill PG&E career connections goals and develop a skilled energy workforce pipeline, focusing on education and training for careers that:

- **Highest Potential for Energy Savings.** Careers include those tied to clean energy and EE with the most potential for energy savings, including energy program manager, IOU

[3] High demand jobs are identified using the following criteria:

- The fastest-growing careers based on Department of Labor and Employment Development Department statistics;
- Relevance to California's energy goals and creating energy efficiency awareness;
- Market availability;
- Transferable skills, and;
- Income potential.

customer relations manager, solar and energy storage installer, and wind turbine technician

- **Completing Energy Savings Projects.** Careers include those that benefit from EE knowledge. Examples include architect, engineering, project management, technician, mechanical support, electrician, construction operator, equipment and appliance installer, maintenance worker, journey lineman, and gas utility worker
- **Educating Others with Knowledge, Resources and Skills to Act on Energy Saving Opportunities.** Careers include those that educate others such as academia, scientist, environmental scientist/specialist, sustainability coordinator/researcher/consultant/engineer, and geoscientist

Workforce Standards

This section is not applicable to the EisE program.

Disadvantaged Worker Plan

EisE is not designed to directly address needs and desired outcomes related to disadvantaged workers. However, the program will build a skilled pipeline of disadvantaged students through career-focused education and skill-building to high-paying, in-demand, living wage energy jobs. EisE will prepare participating-K-12 students to enter entry-level and technical jobs in energy. EisE will prioritize schools in underserved communities, including DAC, HTR to include these populations in the energy transition and job pathways. This emerging future workforce will, through EisE, become equipped with the prerequisite skills, knowledge, and capacity to pursue, attain and maintain high-demand energy careers. EisE aims to intervene in the K-12 pipeline, reaching disadvantaged students with viable career pathways before they become disadvantaged workers. Additionally, through EisE Energy fellowships, students will be placed in internships, gaining valuable on-the-job training and exposure while building relationships and work experience with industry professionals and employers.

Additional Information

No additional information is required.

Supporting Documents

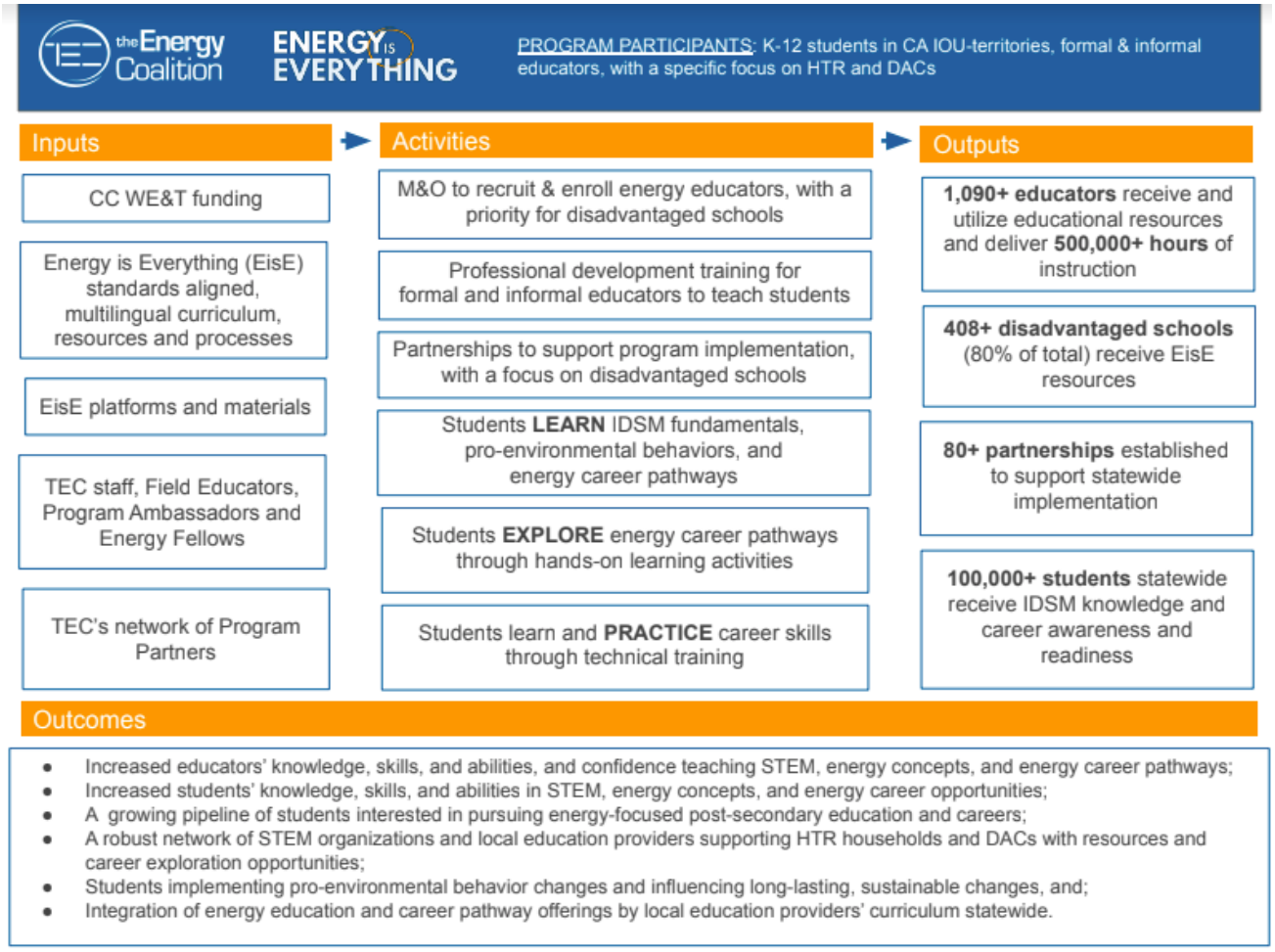
Attach the following documents (in PDF format):

1. Program Manuals and Program Rules

a. EisE will maintain a Program Manual that outlines policies and procedures and serves as a guideline for program implementation.

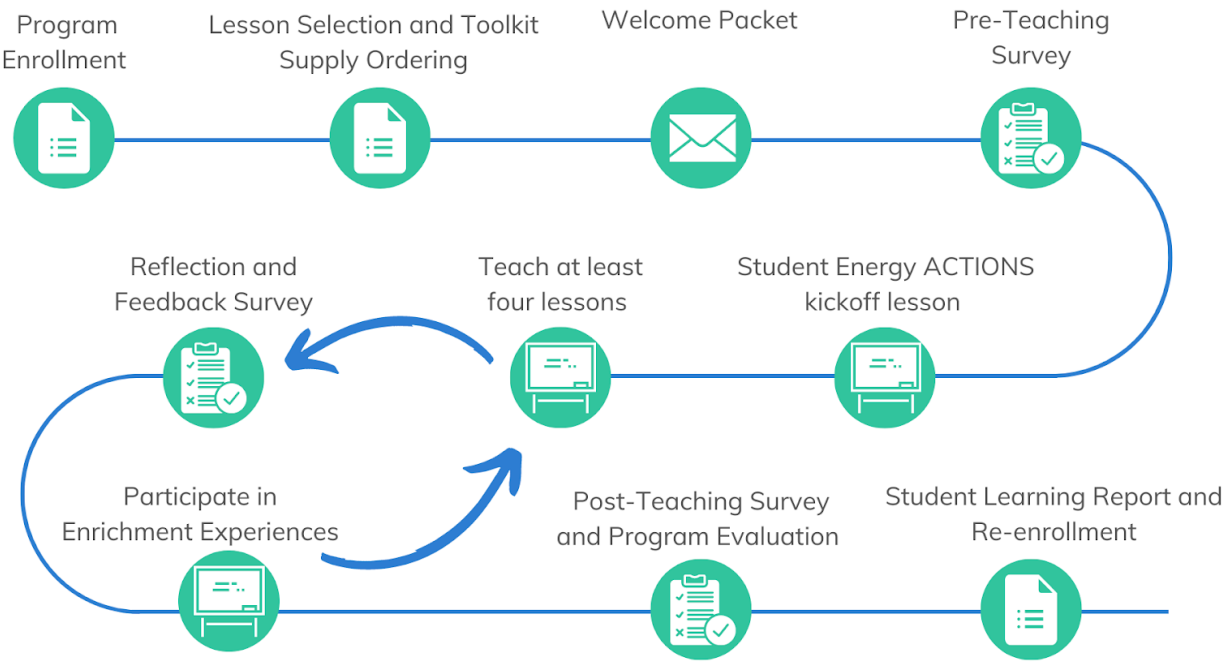
2. Program Theory and Program Logic Model

a. The Program Theory and Logic Model below provides a visual depiction of the underlying EisE theory and approach.



3. Process Flow Chart

a. The process flow chart below visualizes the components of program participant entry through implementation.



4. Incentive Tables, Workpapers, Software Tools

a. This section is not applicable to the EisE program.

5. Quantitative Program Targets

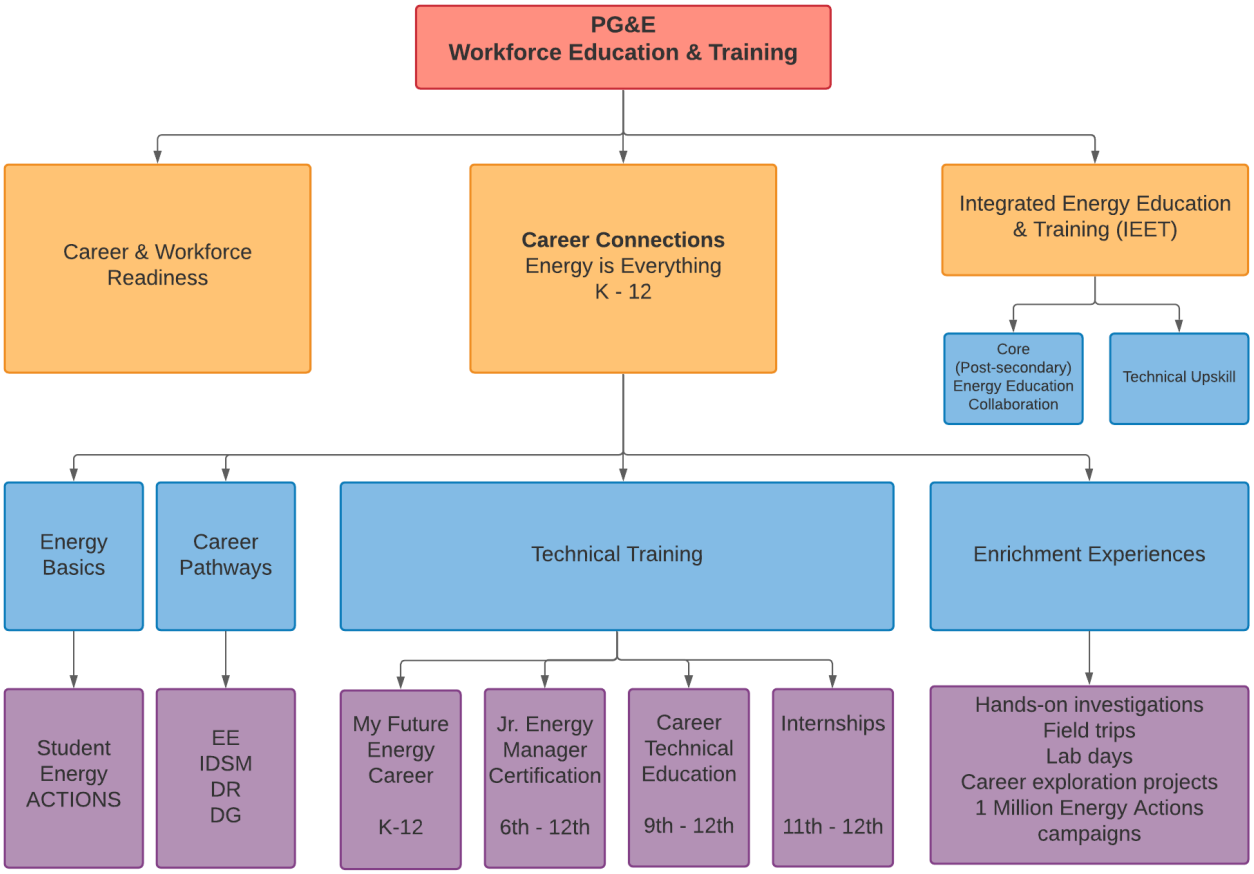
a. The following table provides a high-level overview of quantitative annual performance targets over the five year program cycle.

Quantifiable Outcomes						
Year	1 - 2021	2 - 2022	3 - 2023	4- 2024	5- 2025	Total
Number of energy educators* that received and utilized educational resources (for CC)	0	370	370	350	0	1,090
Number of students enrolled* (for CC)	0	34,000	34,000	32,000	0	100,000
Number of students provided with	0	34,000	34,000	32,000	0	100,000

career awareness/experience (for CC)						
Number of local education providers* served (for CC)	0	175	175	160	0	510
Minimum number of formal local education providers* served (for CC)	0	105	105	96	0	306
Number of disadvantaged local education providers* served (for CC)	0	140	140	128	0	408
Partnerships established	20	30	20	10	0	80
Verified student instruction & training hours	0	153,000	153,000	144,000	0	450,000

6. Diagram of Program

a. This one-page diagram of the program visually illustrates the program and sub programs.



7. Evaluation, Measurement & Verification (EM&V)

a. EisE will comply with all CPUC and PG&E directives, activities, and requests regarding the Program and project evaluation, measurement, and verification (EM&V). The following describes the approaches and data that will be collected for ongoing program evaluation. A more detailed summary of EM&V efforts can be seen in the EisE Program Manual in sections 8.5 to 8.9. Project information will be gathered through a series of discussions and verification checks with each Energy Educator and local education provider. A database within TEC's Customer Relationship Management (CRM) system will be used to track information about the customer, project, energy savings claims, and other details that will help show the impact of this program. Once information is gathered, it will be entered in the database and then used to generate reports. Data will be shared on a quarterly basis or ad-hoc as requested.

8. Normalized Metered Energy Consumption (NMEC)

a. This section is not applicable to the EisE program.