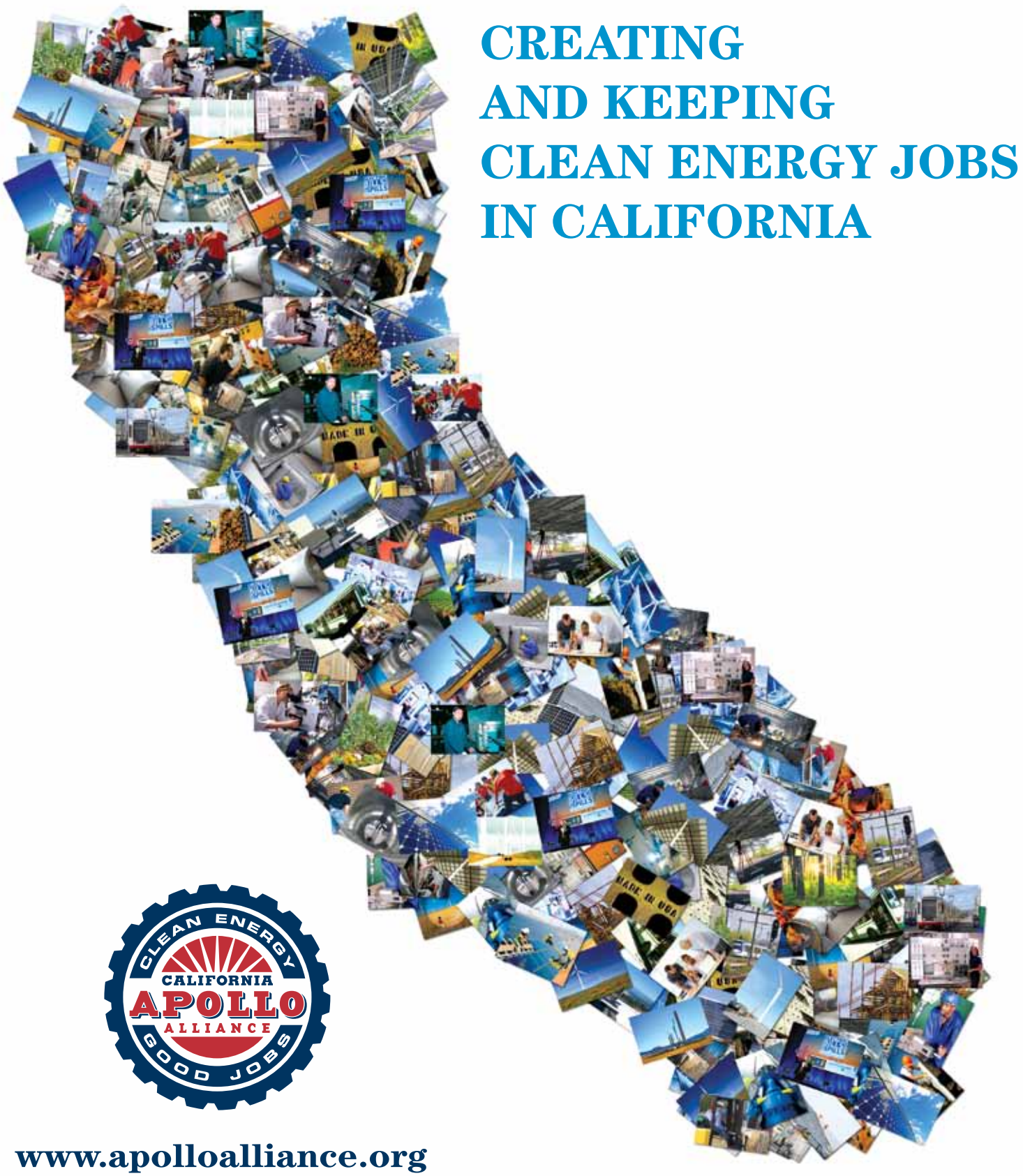
The California Apollo Program



CREATING AND KEEPING CLEAN ENERGY JOBS IN CALIFORNIA

CLEAN ENERGY
CALIFORNIA
APOLLO
ALLIANCE
GOOD JOBS

www.apolloalliance.org

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Introduction

After years of sustained growth, California's economy has been hit hard by the current recession. Since the start of the downturn, we've lost more than one million jobs and, as of summer 2010, 12.4 percent of workers were unemployed.[1] With millions out of work, we can't afford to quit on California's best opportunity to create jobs and ensure a more prosperous decade: the continued expansion of California's clean energy economy.

California's unique combination of human and financial capital, culture of environmental sustainability, record of innovation, and forward-thinking public policy have positioned us to capitalize on rapidly expanding global clean energy investment. *The California Apollo Program* is a comprehensive strategy to keep creating clean energy jobs in California. By doing so, we can restore prosperity and engage new and existing workers and businesses to retain our global leadership in clean energy and technological innovation.

Clean energy businesses in California are already leading our state out of its current economic slump. In 2007, as the recession took hold and overall employment dropped for the first time in five years, jobs in the clean energy economy *grew* by five percent.[2] In addition, California leads the nation in the number of clean energy jobs, businesses and patents generated, and accounts for over two-thirds of U.S. venture capital investment in clean technology – totaling $6.5 billion between 2006 and 2008.[3] Yet some are looking to roll back the policies and initiatives that supported this growth, which would threaten our ability to play a lead role in the rapidly expanding global clean energy economy. With clean energy expected to become the world's third largest industrial sector by 2020, ensuring that we continue to attract clean energy investment – and the job growth it supports – is essential to the future health of the state's economy.[4] Now is the time to accelerate toward a clean energy, good jobs future for California.

Long a national and global leader in clean energy, California's innovative policies created millions of jobs and generated large-scale investment in our state. For example, energy efficiency policies passed over the last thirty years have created 1.5

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California led the nation by becoming the first state to pass a comprehensive law (AB 32) that sends a powerful market signal to investors and clean tech business owners and positions the state to capture a wide range of clean energy jobs.

million jobs and leveled the state's per capita energy use, saving Californians $56 billion in energy costs and making us the most energy efficient state in the nation.[5] Today, California's landmark comprehensive climate change law, the Global Warming Solutions Act of 2006 (AB 32), is and will continue to be a powerful driver of investment and job creation, generating up to $104 billion in economic activity by 2020.[6]

Despite California's historic role as a global innovator, we are losing ground and momentum to domestic and international competitors in the clean energy race amid inconsistent federal support for renewable power and energy efficiency. Today, many of the technologies developed in this state are commercialized and deployed more aggressively overseas. In the 1970s, California gave birth to the solar industry, but today more than 90 percent of worldwide solar PV production occurs outside the United States.[7] Despite these troubling trends, the state's forward-thinking actions to limit greenhouse gas emissions together with increasing federal action to grow the national clean energy economy, present a golden opportunity to retain California's role as an international clean energy leader.

With our large and productive economy, skilled workforce, and history of innovation, we can continue to drive the growth of the U.S. clean energy sector and create jobs for Californians in these growing markets. But this expansion won't occur if we quit on our best opportunity to create jobs by rolling back the policies and initiatives needed to move the state's clean energy economy forward. Our path is clear: we must mobilize the kind of investment and ingenuity that made California the leader of the high-tech revolution, so we can lead the clean energy revolution as well. Furthermore, we must ensure that all Californians have the skills they need to access clean energy jobs. In short, we cannot move forward if we leave some people behind.

The California Apollo Program is a blueprint for redoubling our commitment to building a new energy future while moving our state toward broadly shared economic prosperity, energy security, and climate stability. California's green future is a bright spot on the horizon.

Roofer from Local Union 81 applies energy saving "cool-roof" coating

Create Jobs by Transforming the Way California Generates and Uses Energy

If we are to capture the next generation of clean energy jobs, we must continue to make progress building and expanding the enormous state-wide market for clean energy technologies. California's economy is the eighth largest in the world, bigger than those of Mexico, Russia, Spain, and India.[8] Transforming the way we generate and use energy will leverage California's large and productive economy to ensure that we continue to create clean energy jobs, capture future investment in clean energy, and drive the national and global growth of clean energy technologies.

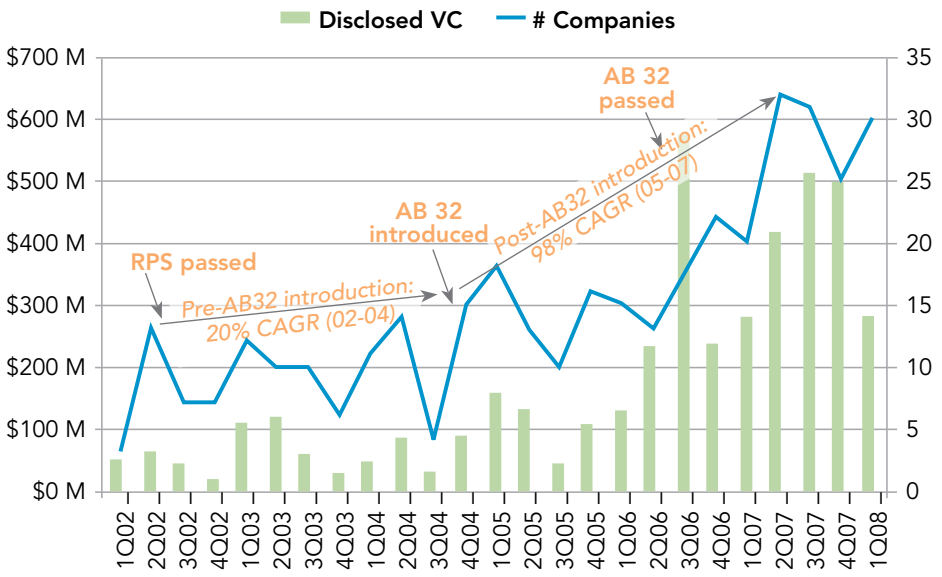
Realize the economic opportunity of California's groundbreaking comprehensive climate legislation.

California led the nation by becoming the first state to pass a comprehensive law (AB 32) that sends a powerful market signal to investors and clean tech business owners and positions the state to capture a wide range of clean energy jobs. Economic analyses project that AB 32 could create nearly 750,000 new jobs over the next ten years.[9] To realize these economic benefits, we must fully implement AB 32, which will reduce greenhouse gas emissions and simultaneously generate billions of dollars in private and public investment in clean technologies.

Generate 33 percent of California's power from renewable sources and prioritize in-state production by 2020.

California already generates more than ten percent of its energy from renewable sources like wind, solar, and geothermal energy.[10] Generating one-third of the state's power from renewable sources, combined with

Cleantech Venture Capital Investment in California



Source: Cleantech Group (cleantech.com)

California's unique combination of human and financial capital, culture of environmental sustainability, record of innovation, and forward-thinking public policy have positioned us to capitalize on rapidly expanding global clean energy investment.

Blythe Solar Plant Signifies Bright Energy Future for California

Commercial solar plant in Blythe, California

December 21, 2009 marked an historic day for clean energy in California, as the largest thin film photovoltaic (PV) solar plant in the United States began its commercial operations in Blythe, California. The Blythe facility, developed by First Solar Inc. and purchased by NRG Solar, has a 20-year power purchase agreement with the local electric utility, Southern California Edison (SCE), who estimates that the 21 megawatt (MW) plant will power nearly 17,000 homes.

While California continues to struggle with rising unemployment, the construction of the Blythe facility was a boon for local workers, employing 296 union members of the International Brotherhood of Electrical Workers (IBEW) Local 440 over the course of three months. This included 109 journeyman electricians, 129 registered apprentices, and 58 electrician trainees. According to Roger Roper, president of IBEW Local 440, the average base pay for union electricians is $35.50 per hour plus $14.00 per hour in benefits.

Developers also collaborated with the Workforce Development Center to hire local residents seeking work, and with "Helmets to Hardhats," an organization that helped put over two-dozen electricians with military backgrounds into the training program at the Blythe facility. California Governor Arnold Schwarzenegger said, "It is no surprise that America's largest thin film solar project was built right here in California…It is forward-thinking businesses such as First Solar that will help California reach its nation-leading greenhouse gas reduction and Renewable Portfolio Standard goals, as well as create the new green jobs that will help spur our economic recovery."

The rapid job creation that occurred at the Blythe facility bodes well for future solar projects. First Solar and Southern California Edison have already announced plans to build two more large-scale PV plants totaling 550 MW of output, enough to power roughly 170,000 California homes and create thousands of good jobs for Californians in construction and operations. As a result of California's forward thinking policies, there are even bigger projects on the way, but the commencement of operations at Blythe represents a paradigm shift occurring in the California energy sector, and a symbol of the bright and renewable future ahead.

For the full version of this story, please visit the Apollo Alliance website: www.apolloalliance.org

Wind farms represent one of many strategies for creating clean energy jobs in rural areas

accelerated improvements in energy efficiency, has the potential to create as many as 566,000 new jobs throughout California by 2020.[11] In addition, shifting to cleaner fuel sources will improve air quality, lifting the burden on communities hardest hit by air pollution and reducing the $28 billion in pollution-related health costs borne by our state and its residents each year.[12]

Upgrade California's existing buildings to world class energy efficiency standards and ensure that new construction is "green."

Increasing the energy efficiency of California's public and private buildings offers the most immediate opportunity to create clean energy jobs and save consumers and taxpayers money. In 1978, California became the first state in the nation to pass energy-saving building codes. We must build on this history of success by incentivizing and investing in comprehensive state and local retrofit plans that target all commercial, residential and industrial buildings, conserve water, and reduce or eliminate upfront costs associated with efficiency upgrades. State and local governments must work together to expand access to energy efficiency retrofits, through low-to-no-cost loans and financing programs. We have taken an important first step by enabling local governments to use innovative mechanisms like the Property Assessed Clean Energy (PACE) program. In addition, because three-quarters of the built environment in the U.S. will be either new or renovated by the year 2035, we must ensure that any new construction or significant remodels be built to the highest possible efficiency standards.[13]

Modernize the power grid to support clean energy generation and smart grid technology.

To support new renewable power projects, an electrified transportation system, and greater grid reliability, we must modernize California's out-of-date power grid. The California Independent System Operator estimates that six or more major new transmission lines will be needed between now and 2030 to support additional demand and new renewable energy projects.[14] We can put Californians back to work updating and maintaining our current power grid, connecting new renewable energy projects and leading the nation in deploying smart grid technologies.

Require smart, sustainable and equitable approaches to land use as California's communities grow.

Sprawling development is unsustainable and threatens our state's vast farm and forest lands. Existing development patterns increase our reliance on cars and result in greater energy demands, unsustainable water use, and increased costs for public services like road, power, and water infrastructure. In 2008, California passed the Sustainable Communities and Climate Protection Act, which requires regions to develop Sustainable Community Strategies that are in line with greenhouse gas reduction goals, as part of their overall land use and transportation planning. To do this, the law promotes infill development and provides incentives for locating housing near transit and jobs. State and regional planning organizations must continue to support the implementation of these strategies at the local level and advance the twin goals of smart growth and energy savings.

Revitalize rural California by expanding environmentally sustainable renewable energy and carbon sequestration projects.

California's vast rural areas must play an essential role in building the state's clean energy economy. Rural communities, plagued by some of the highest unemployment rates in the state, have unique strengths that can capture clean energy investment and create quality jobs, in projects such as wind and solar farms, biodigestors, and the cultivation and processing of sustainable non-food biofuels. Smart, targeted rural energy investment should allow farmers, rural landowners, and communities to ultimately own and sustainably manage the energy and fuel produced by these rural ecosystems. Rural industries like agriculture and forestry can generate environmental and economic benefits by developing locally appropriate carbon sequestration projects. While spreading the benefits of the green economy to rural communities, we must ensure the health and sustainability of California's rural ecosystems, which are essential to our food, energy, and water security.

Create Jobs by Maintaining California's Global Leadership in the Clean Energy Economy

Research and development, demonstration, and commercialization of new clean energy and efficiency technologies offer a tremendous economic opportunity for our state. California is an historic leader in the development of new, advanced technologies. We boast top-notch universities and research labs, and 67 percent of America's total venture capital is invested here.[16]

In the past, California successfully leveraged these assets to launch the global information technology revolution. With the right policies and investments we can ensure that California is also home to the "Silicon Valley" of the clean energy revolution. By continuing to unleash innovation and unlock larger clean energy investments, we will create new opportunities for California businesses and more jobs for our residents.

Invest in clean energy research and development. California's technological leadership is threatened by other countries and states that are targeting investment

California Apollo Alliance's Track Record of Green Victories

The Apollo Alliance is a national coalition of labor, business, environmental, and community leaders dedicated to advancing a bold new vision for the American economy centered on clean energy and good jobs. Apollo promotes investments in energy efficiency, clean power, mass transit, next-generation vehicles, emerging technologies, and education and training. Working together, the national Apollo Alliance and its 17 state and local affiliates strive to lead the nation towards broadly shared economic prosperity, energy security, and climate stability.

Green Jobs Corps Rally in Oakland, California

Since its creation as Apollo's first state affiliate in 2004, the California Apollo Alliance has been a key player in the state's transition toward a clean energy, good jobs economy. Following the passage of AB 32, California's groundbreaking comprehensive climate law, Apollo advocated for strong companion legislation such as AB 118, the Alternative and Renewable Fuel and Vehicle Technology Program. As a member of the AB 118 advisory committee, Apollo successfully pushed for the inclusion of stronger manufacturing incentives and a workforce training and education provision. Apollo also worked on AB 3018, the California Green Collar Jobs Act, which established the Green Collar Jobs Council, and AB 2855, Career Technical Education, Partnership Academies, Green Tech and Goods Movement, which established high school Green Technology Partnership Academies. Additionally, California Apollo influenced AB 32 implementation by helping gain inclusion of workforce training and "Buy California" manufacturing provisions, and an implementation advisory committee recommendation that future carbon revenue be invested in clean energy projects and a community benefits fund.

Following the unprecedented level of clean energy investment in the American Recovery and Reinvestment Act (ARRA), California Apollo was a founding member of the California Green Stimulus Coalition and helped create guidelines that influenced more equitable, effective, and accountable use of ARRA funds in California. In addition, California Apollo provided guidance on creating the California Green Jobs Corps, a $20 million public-private partnership that will provide 1,500 at-risk young adults with opportunities for hands-on green jobs training.

California Apollo also worked with Apollo's city-level affiliates on a number of groundbreaking city-scale initiatives across the state. The Oakland Green Jobs Corps, initiated by the Oakland Apollo Alliance and Solar Richmond, is currently training low-income residents for jobs in energy efficiency retrofits and renewable energy installation. The L.A. Green Retrofit Ordinance, spearheaded by the Los Angeles Apollo Alliance, will retrofit city buildings in low-income neighborhoods while training local residents for green careers in construction.

The California Apollo Alliance continues to be a tireless advocate for a greener and more equitable California.

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to promote clean energy research and development. If California is to remain a leader in this arena, we must continue to invest in successful research and development initiatives such as tax credits for research and development and alternative and renewable fuel and vehicle R&D incentives. Another example is the Public Interest Energy Research (PIER) program, which is funded by electricity and natural gas ratepayers and supports research, development, and demonstration of new advanced transportation, energy efficiency, and renewable energy technologies.[17]

Target public and private support toward commercialization of new technologies.

California holds a growing share of U.S. patents in solar energy, wind, fuel cells, and battery technology.[18] But increasingly these technologies are brought to market by other countries like China and Germany. In order to bring new clean energy and efficiency technologies to market, public investments must leverage private capital to bridge the "valley of death" by financing demonstration projects and supporting the early phases of commercial deployment. We should ensure that new technologies ready for commercialization are manufactured in California by supporting firms that will produce clean energy products here through initiatives like the Clean Energy Business Financing Program, which provides loans to help manufacturers retool or expand to make clean energy products and components.[19]

Silicon Valley Leadership Group President and CEO Carl Guardino speaks about AB 32 as a driver of clean tech investment at an event that also included venture capitalist Vinod Khosla and Google's Clean Energy Czar Bill Weihl

Support public-private research and development partnerships.

California must promote and expand partnerships with private sector leaders such as the Innovation Hub (iHub) initiative, which establishes centers of excellence that target clean energy technologies, support innovative demonstration projects, and attract venture capital to California.[20] In addition, the state should expand its support for regional research and development initiatives to bring clean energy solutions to scale and help local governments access needed resources and expertise to reach their climate, clean energy, and job creation goals. For example, the East Bay Green Corridor project brings together cities, universities, training institutions, and private sector representatives to develop the regional green economy by facilitating technology transfer, supporting green technology start-ups, and ensuring a skilled local workforce.[21] In supporting new public-private partnerships, any public investment should be paired with strong workforce protections, to ensure that demonstration and deployment efforts support the creation of good, family-supporting jobs.

Provide sufficient and stable support for California's institutions of higher education.

California's public universities have endured decades of reductions in state funding, which are threatening the state's role as a global technology leader. The California State University system will cut enrollment by 40,000 students in 2010, and the University of California system will increase tuition by 32 percent.[22] To sustain California's leadership in technological innovation, we must educate the highly skilled workforce needed to develop new advanced technologies. Providing adequate and stable funding for the state's institutions of higher education is essential to preparing the current and next generation of engineers, scientists, and clean energy leaders, and supporting the research labs that generate new technologies.

Restoring our manufacturing employment base is central to rebuilding the California economy, as each manufacturing job supports an average of 2.5 jobs elsewhere in the economy and pays $25,000 per year more than a typical service sector job.

Sheetmetal worker from Local Union 104 fabricates energy efficient ventilation system

Create Jobs by Making It in California, by Californians

California is the country's leading manufacturing state, contributing almost $200 billion, or 12.7 percent, of the U.S. manufacturing real GDP.[23] However, over the past decade, the state has lost nearly one-third of its manufacturing jobs.[24] Restoring our manufacturing employment base is central to rebuilding the California economy, as each manufacturing job supports an average of 2.5 jobs elsewhere in the economy and pays $25,000 per year more than a typical service sector job.[25] Expanded production of clean energy in California can help support a wide range of manufacturing jobs. Nearly one-quarter of all green jobs are in the manufacturing sector and, by one estimate, stronger national renewable energy standards could support nearly 100,000 new manufacturing jobs at over 5,000 firms across the state.[26] California should be a world leader not only in the production of renewable energy, but also in the manufacture of clean energy systems and component parts.

Help manufacturers retool their factories and retrain their employees to produce clean energy products.

California manufacturers have been hit hard by tightening credit markets and ensuring access to capital is essential to building California's clean energy manufacturing base. Access to capital and other incentives will enable these companies to retool and retrain to make the clean energy products, systems, and component parts of the future. For example, the California Clean Energy Business Financing Program (CEBFP), funded by the American Recovery and Reinvestment Act of 2009, will provide more than $30 million in low-interest loans to California manufacturers of clean energy products, systems, and component parts. The state should scale up these efforts by deploying additional resources to leverage private capital and expand California's clean energy manufacturing sector. This could take the form of loan guarantees, expanded access to low-cost financing, and grants or subsidies from utility funds to support industrial efficiency retrofits. In addition to new investments, we should better utilize and connect existing programs, such as California's Hollings Manufacturing Extension Partnership, to help manufacturers become more efficient through the incorporation of new technologies and the organization of their supply chains.

Revamp California's transportation manufacturing industry to meet growing demand for high-efficiency vehicles.

From the birth of the plug-in electric car to planned investments in electric and alternative-fuel vehicle infrastructure, California has been a leader in promoting next-generation vehicle technology. As the markets for these vehicles grow, and a reauthorized federal transportation bill increases demand for public transit vehicles and high-speed rail trains, California should capitalize on its history of advanced vehicle manufacturing. Building on the success of existing initiatives such as the Vehicle Technology Program (AB 118), the state should further support local and regional efforts to attract and expand in-state manufacturing of high-efficiency vehicles, including clean trucks, high-speed rail trains, buses and other transit vehicles.

Tanya Pitts Sees a Well Lit Career Path in Advanced Lighting

An increasing number of commercial buildings owners in California are employing energy-efficient lighting techniques to save money and reduce their buildings' energy usage. Their actions are being spurred on by regulations like California's Title 24 energy efficiency standard, incentives from utility companies like PG&E, and the increasing cost of electricity in California during peak hours.

All of this means more work for people like Tanya Pitts – a 32-year-old electrician from Oakland who's certified in advanced lighting controls.

"Right now I'm working on a hospital in Castro Valley," Pitts said. "We have low-voltage lighting and lighting control panels. We're doing a lot of different lighting control systems to conserve energy and light the building up in an efficient manner. This is a brand new building, so it uses all the latest technology in energy harvesting."

Pitts has become an expert in advanced lighting because she not only has five years of experience working on lighting in high-rise buildings, bio-tech corporations, schools and elsewhere; she also graduated from a cutting edge advanced lighting training program through the University of California at Davis California Lighting Technology Center. The program is a collaboration between Pitts' union, the International Brotherhood of Electrical Workers (IBEW), its Joint Apprenticeship Training Center (JATC) with the National Electrical Contractors Association, and the California Energy Commission, among others.

Advanced lighting encompasses way more than the use of energy efficient light bulbs. It involves installing systems that shut off lighting when it's not needed and take advantage of natural light. For example, motion sensors automatically turn lights on when someone is in a room and turn off when no one is there. Daylight harvesting panels take advantage of natural light by dimming lights at times when natural light is at its maximum daylight brightness.

California energy policies, such as the Title 24 energy efficiency standard, help drive the development and deployment of cutting-edge advanced lighting systems

Pitts' local labor union, IBEW Local 595, is a leader in energy-efficient lighting as well as other green technologies. "We have solar training in our JATC; we're on the front lines advocating for more solar; and we're a member of the Apollo Alliance. We're also on the front lines of getting contractors to go green in the lighting sector," Pitts said. Additionally, the union encourages Pitts and her fellow workers to get involved with environmental and other community issues. Through Local 595, Pitts sits on the Oakland Housing Authority board of commissioners, where, among other things, she is involved in developing new standards for using energy-efficient appliances in public housing and installing solar panels on Housing Authority buildings.

Tanya Pitts is a union electrician certified in advanced lighting controls

According to the American Council for an Energy-Efficient Economy, lighting accounts for more than 40 percent of electricity use in U.S. commercial buildings. If all commercial buildings installed state-of-the-art lighting systems, they would lower U.S. carbon dioxide emissions by about 175 billion pounds per year. That is why Pitts and Local 595 are not only installing these systems—they are training more electricians and contractors to do the same. This fall, Pitts will teach electrician apprentices the techniques she learned in the California Advanced Lighting Controls Training Program.

"It's definitely encouraging to me that I get to do something that creates less pollution and less waste in the world," Pitts said. Not to mention more high-quality, green jobs.

For the full version of this story, please visit the Apollo Alliance website: www.apolloalliance.org

Invest in next-generation alternative fuels and California's low-carbon fuel infrastructure.

California is one of the world's largest consumers of oil, and negative health impacts from diesel pollution alone cost Californians $22 billion in 2004. We can save money, create jobs, and further reduce pollution by running the vehicles we produce on alternative fuels like electricity and non-food biofuels. California should continue to incentivize the production of advanced, non-food biofuels by fully implementing the Alternative and Renewable Fuel Technology program (AB 118) and the existing low-carbon fuel standard, and by developing the infrastructure to meet increasing demand within California. This will help power our vehicles more sustainably and support the growth of California's low-carbon, non-food-based fuel industry.

Modernize California's transportation infrastructure to connect our neighborhoods, cities and rural areas with world-class transit systems.

California's transportation sector is 96 percent reliant on fossil fuels and responsible for 39 percent of the state's greenhouse gas emissions. We can go a long way toward reducing greenhouse gas emissions, air pollution, traffic congestion, and commute times by changing the way California invests the $13 billion per year we already spend on roads, bridges, and public transit systems.[29] We should invest a greater share of existing and future funding in the expansion of municipal and regional transit projects and equitable high-speed rail systems; and ensure consistent funding for their operation and maintenance. Not only will these investments improve transportation options and connect our urban and rural areas, they will save consumers money since households riding public transportation save more than $9,000 a year on average.[30]

Promote "Buy California" and "Buy America" policies.

To maximize the impact of California's infrastructure and clean energy investments, we must enact "Buy California" preferences, which would ensure that state procurement funds support in-state businesses and suppliers. These policies will help guarantee that clean energy manufacturing and other jobs funded through state expenditures provide the maximum benefit to California's economy. In addition to preferences for in-state production, California should ensure that its public investments leverage national manufacturing jobs growth as well by enacting policies that encourage the use of American iron, steel and manufactured goods in all public buildings and public works projects – similar to those that apply to federal dollars.

Expanding investment in public transportation, such as San Francisco's "Muni" system, creates jobs and reduces carbon emissions and other pollution

Recycle and reuse it in California.

To make our manufacturing sector truly sustainable, we need to recycle and reuse the goods and materials we produce within California. We should expand effective California programs, such as the Recycling Market Development Zone (RMDZ), which provides low-interest loans, technical assistance, and free product marketing to businesses that manufacture products from recycled materials. In addition, the state should set a new goal for its successful landmark comprehensive waste reduction strategy to a 75 percent reduction of 1989 levels by 2020.[31] For the commercial sector, which has historically low recycling rates, we should implement the commercial waste reduction strategies called for in AB 32. These strategies can help support new jobs in California's recycling sector, an industry that already employs more than 85,000 people, as well as generates broader economic benefits. For example, recycling a ton of waste creates $101 more in salaries and wages, produces $275 more in goods and services, and generates $135 more in sales than dumping that waste in a landfill.[32]

We can reduce greenhouse gas emissions, air pollution, traffic congestion, and commute times by changing the way California invests the $13 billion per year we already spend on roads, bridges, and public transit systems.

Create Economic Prosperity for All and Tap the Skills and Productivity of California's Workforce

California has been a leader in developing and pioneering training programs that can help all Californians access quality green career pathways. All over the state, new innovative partnerships between community colleges, union apprenticeship programs, community-based programs and Workforce Investment Boards are preparing current and future workers for jobs in expanding clean energy sectors. Union apprenticeship programs have been training workers for the skilled trades for decades and are implementing new curriculum reforms to prepare workers to implement California's leading environmental standards in the construction and energy sectors. And cities across the state are enacting living wage, local hiring and other policies that guarantee jobs created by green investments are quality jobs. We must continue these efforts and ensure that as we expand California's clean energy economy, we guarantee that clean energy jobs will be quality jobs, make career pathways accessible to all Californians, and create pathways out of poverty and into economic prosperity.

Train California's workers to meet the demands of the clean energy economy.

We must invest in California's workers so that they have the skills they need for clean energy jobs at new and existing firms. There are thousands of construction trades, manufacturing, and service sector workers whose skills can quickly be tapped for many jobs in the green economy. Thousands more workers – employed and unemployed – can have a future in green industries if given appropriate training and access to good jobs. We must support all of the critical components of the workforce development system that prepare workers to thrive in clean energy jobs, including job readiness and preparatory apprenticeship programs connected to union apprenticeships, journey-level training, community colleges, and community-based training partnerships. At all steps along the training continuum, there must be an emphasis on providing portable, industry-recognized certificates of quality and achievement. Career pathways that lead to high-quality, clean-energy jobs must begin with a K-12 education system that teaches students strong literacy and math skills, offers Career Technical Education in green industries, and continues all the way through California's world-class university system.

Workers in the "Solar Richmond" training program install solar panels

Ensure that the transition to a clean energy economy creates pathways out of poverty.

California's economic and workforce development investments must create meaningful training and employment opportunities for individuals and groups that have historically been excluded from the state's economic growth. Training programs at the state level must create real pathways out of poverty with multiple access points and connections to real jobs, and target low-income and disadvantaged communities, especially those that have been hardest hit by the recession. Additionally, state and local clean energy investments should include local and targeted hiring requirements that guarantee equitable access to new clean energy job opportunities.

Prioritize good, family-supporting jobs.

California's families need well-paying, safe, career-track jobs that provide benefits, retirement security, paid sick leave, and access to on-the-job training that leads to opportunities for advancement. Good jobs boost the economy in ways that low-paid jobs do not, avoiding state expenditures on public safety-net programs and bringing in additional tax revenue.[33] Any state funding to support the deployment of clean energy systems or the development of clean energy supply chains should include project or responsible contractor requirements that guarantee that workers are paid good wages and provided full benefits, and that local residents and those with barriers to employment have access to job and training opportunities.

California must take steps to capitalize on this expanding opportunity for economic growth and job creation while doing our part to mitigate the impacts of climate change.

Conclusion

We Can't Afford *Not* to Implement the California Apollo Program

Building and strengthening California's clean energy economy is our ticket – and that of future generations – to a more prosperous tomorrow. Clean energy jobs are already growing faster than those in other sectors of the economy, and the next decade will see rapidly increasing global investment in the clean energy sector.[34] California must take steps to capitalize on this expanding opportunity for economic growth and job creation while doing our part to mitigate the impacts of climate change. We can't afford to quit while we're ahead and miss out on this investment. Now is the time to aggressively implement the clean energy job creation strategies that will spur the continued growth of California's clean energy economy.

The California Apollo Program does not require major new investments; it requires smarter investments and smarter policies. Many of the changes called for in *The California Apollo Program* will cost the state little to nothing, but they will boost the state's economy by creating good jobs and broadly shared prosperity. Despite the state's financial difficulties, we can't afford *not* to make these essential investments. Funding streams from existing legislation, expected state and/or federal carbon revenue, and new federal programs will dramatically increase investments in clean energy and workforce development without impacting the state's budget. Furthermore, sound investments in a clean energy future will pay for themselves many times over by creating jobs and economic growth.

The California Apollo Program promotes the continued implementation of the Global Warming Solutions Act (AB 32) – an essential driver of our clean energy economy. As one of the largest consumers of oil and eighth largest economy, California's initiatives to stabilize the climate and deploy clean energy economies have global significance. As wildfires increase, snow packs recede and sea levels rise, we are already feeling the impacts of climate change. The State of California released a strategic plan on adaptation to climate change that says if we do not take meaningful action to address the problem, the state could face direct annual costs of nearly $4 billion due to floods, fires and other natural disasters.[35] In addition, the effects of climate change could threaten $2.5 trillion of California's $4 trillion in real estate assets.[36] The cost of inaction is immense, and continuing our state's leadership on this issue makes both environmental and economic sense.

A growing number of commercial-scale solar projects are creating jobs across California

The California Apollo Program offers a comprehensive strategy for building the state's economy and creating jobs. We must transform the way we generate and use energy to drive demand and capture growing clean energy investment, ensure that we continue to lead in the development of new clean technologies, and guarantee that we capture the full range of economic benefits promised by this growth – both in producing clean energy systems and components and by creating pathways into clean energy careers. Taken together, these policies will ensure that as California emerges from recession, we build a stronger foundation for future economic growth and sustainability that positions us at the forefront of the global clean energy race.

At this critical juncture, we cannot afford to quit on California's best opportunity to create jobs and ensure a more prosperous decade. Working together, let's accelerate toward a future of clean energy and good jobs for California.

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For web links to these citations, please visit: www.apolloalliance.org/programs/caap

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