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INTRODUCTION

With "green collar" job development becoming such a vital and promising aspect of our political, environmental and economic landscapes, these are exciting times to be involved in regional green industry planning. As a county with expertise and advantages in several major related industries, Orange County is uniquely positioned to garner regional competitive advantage from the development of a focused, comprehensive, and inclusive, green industry strategy.

DEFINITION: **GREEN JOB**

For this project, we will work under the following definition of green job (while tailoring specific jobs to determining factors within in Orange County).

A **"Green Job":**

1) Directly works with policies, information, materials, and/or technologies that preserve and enhance environmental quality

2) Requires specialized knowledge, skills, training or experience in these areas.

Green jobs can be classified in two main categories:

    i)   Jobs within **green industries** that have as their core function to preserve or enhance environmental quality, and
    ii)   Jobs that contribute to **greening industry**, by adding skills or functions to current occupations that improve that industry's ability to preserve or enhance environmental quality.

The OCWIB Green Ad Hoc committee will aim to foster the development of green jobs in existing industries while also optimizing conditions for the settlement of new green industry in the region.

MISSION OF THE OCWIB GREEN AD HOC COMMITTEE:
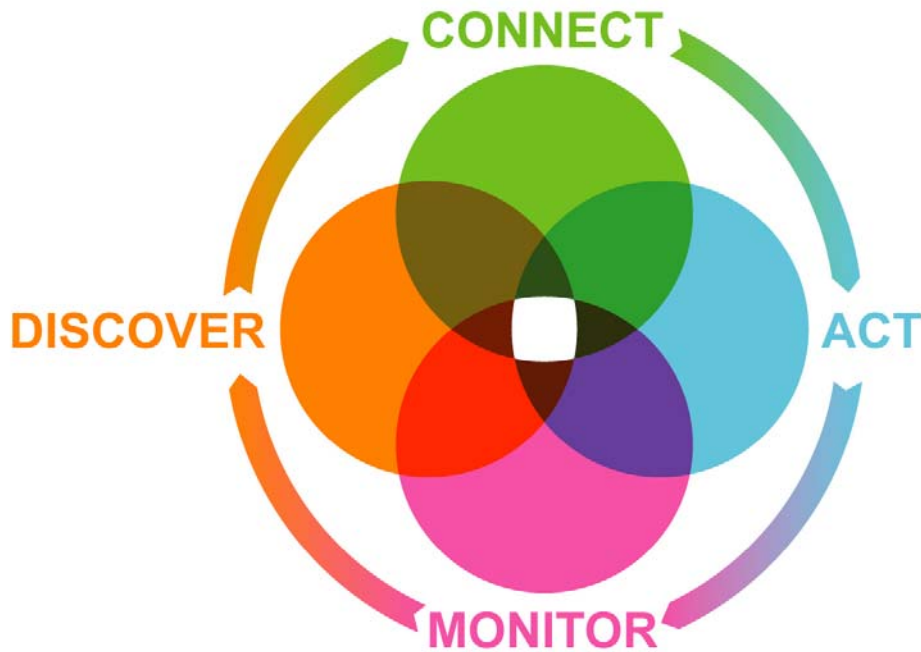
There are four elements to the mission of the OCWIB Green Ad Hoc Committee:

    1) To Provide Education and Training for Green Jobs

    2) To Create Green Jobs

    3) To Retain Green Jobs

    4) To Turn Orange County Green

<u>G</u>reen <u>I</u>nitiatives <u>S</u>trategic <u>T</u>actics (GIST) Plan

A comprehensive green industry strategy, that enables the OCWIB Green Ad Hoc to meet its four goals, may be divided into the following phases:
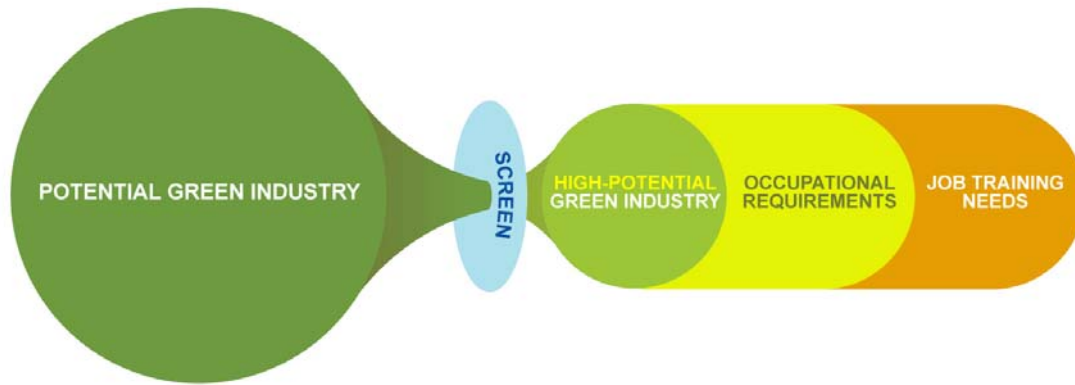
This document represents initial results from the **DISCOVER** phase, and includes elements necessary to set the stage for more in-depth research, strategy formulation, and program development.

DISCOVER
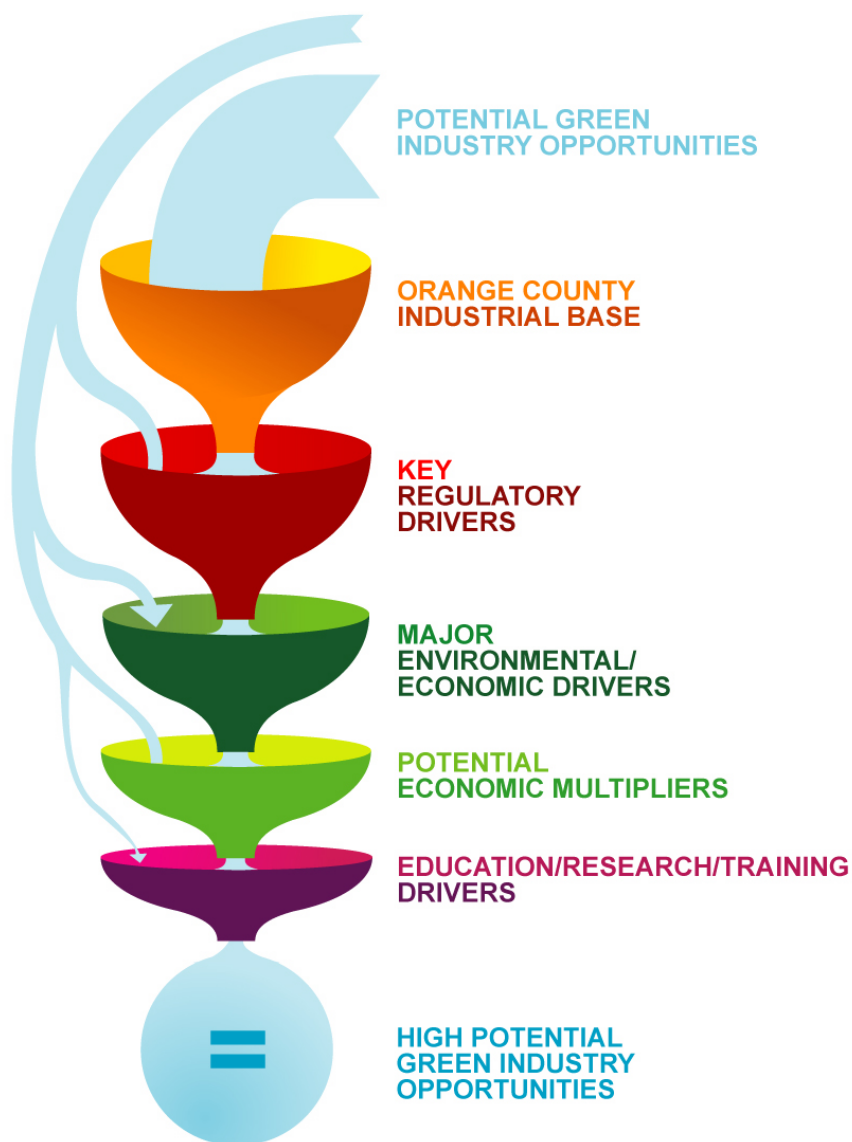
DISCOVER

The overall goal of the **DISCOVER** phase has been to identify high potential areas of the Orange County economy for which green industry development is likely to lead to overall competitive advantage for the county. From here, occupational requirements for each industry can be assessed, which informs potential research and educational needs, including job-training programs.

IDENTIFYING OPPORTUNITIES

To identify high potential green industry opportunities in Orange County we have begun by specifying five different aspects of the Orange County business environment, that are drivers of regional competitive advantage and job growth: 1) Orange County's Industrial Base, 2) Regulatory Drivers, 3) Key Environmental/Economic Drivers 4) Potential Economic Multipliers, and 5) Education/Research/Training Drivers.

We envision these five areas as "funnels", passing various industries through these screens to isolate industries for which "greening" potential is high, and for which greening opportunities will reap the largest benefits for the county. This process, illustrated below, has provided us with suggested areas of major focus for Orange County's green industry strategy.

POTENTIAL GREEN INDUSTRY OPPORTUNITIES

ORANGE COUNTY INDUSTRIAL BASE

KEY REGULATORY DRIVERS

MAJOR ENVIRONMENTAL/ ECONOMIC DRIVERS

POTENTIAL ECONOMIC MULTIPLIERS

EDUCATION/RESEARCH/TRAINING DRIVERS

= HIGH POTENTIAL GREEN INDUSTRY OPPORTUNITIES

Economic Clusters

The first screen through which this analysis has been conducted has been to identify relevant industry clusters that will be integral to the county's green industry strategy. Industry clusters are defined as: "geographic concentrations of competing, complementary, or interdependent firms and industries that do business with each other and/or have common needs for talent, technology, and infrastructure." (Source: U.S. Economic Development Administration, 2008). Firms in a cluster may cooperate across a supply chain to produce knowledge and technological innovation. However, there may also be strong competition between firms in a cluster at the same stages of production. In general, clusters take on quantitative definition not only due to spatial co-location, but also due to identification of interrelationships of purchasing and sales between industries.

The cluster-mapping model is widely used as a method for identifying economic sectors where green collar jobs are expected to grow, and for forecasting overall green industry movement and growth. As Annalee Saxenian has identified in a famous case study of the Silicon Valley region, the formation of industry clusters support faster improvement and innovation of products.

Through cooperative work with the Orange County Business Council (OCBC), the OCWIB has developed a significant research program for understanding and identifying clusters in Orange County. This part of the funnel makes use of this research to better understand the potential for green industry in Orange County. Typically, emerging green industries are "hidden" inside the standard industry classification system. Further discovery is necessary to uncover these industries within Orange County's clusters.

Industry Cluster Trends: Orange County

Orange County has approximately 40% of its employment in ten industry clusters: Business and Professional Services, Health Services, Tourism, Construction, Communications, Biomedical, Computer Hardware, Computer Software, Defense and Aerospace, and Energy and Environment. (Source: CEDS, 2008)

Three Orange County clusters – Business and Professional Services, Health Services, and Tourism – show projected job growth for all statewide economic scenarios, including the recession scenario (loss of 0.86 percent of California employment). These clusters are among the County's largest, and their growth is stable during periods of statewide expansion or contraction. For that reason, job training targeted at the Business and Professional Services, Health Services, and Tourism clusters should be a mainstay of Orange County's overall workforce development efforts. (Source: California Employment Development Department, 2007).

In addition to these recession resistant clusters, other clusters are notable for relatively high multiplier effects or salaries (e.g., high technology, advanced manufacturing, and construction). Other significant Orange County clusters include FIRE (finance, insurance and real estate), Logistics, and Defense/Aerospace.

OC Cluster Employment Trends

The three most recession resistant clusters, Business and Professional Services, Health Services, and Tourism, are also the county's largest. Overall, this underscores the importance of the service sector in the Orange County economy. These three large clusters posted solid employment growth during the 1990s, with Business and Professional Services growing at a 3.15% annualized rate over the ten year period, Health Services posting 1.12 % annual growth, and Tourism growing at a 1.78 % annual rate. (Source: California Employment Development Department, 2007)

Since 2001, these clusters have seen strong growth, with the Construction industry joining the top ranks. Since these data were published, new construction has slowed, yet as will be discussed later, green retrofitting of existing construction and stimulus spending for infrastructure may be an opportunity to bolster this sector. In the long run, it is also important to prepare for recovery and re-emergent growth in construction. From 2001 through the second quarter of 2006, Business and Professional Services employment increased by 17.63%, Health Services employment grew 16.44%, Construction grew 27.67% and Tourism grew by 8.10%. (Source: California Employment Development Department, 2007)

Economic Clusters: High Tech Cluster Diversity

Orange County had eighteen industries with high-tech output above the national share of high-tech output thus making Orange County the most diverse high-tech economy in the country. This diversity has buffered the County from the fallout of the technology sector slowdown that took place between 2001 and 2003. Since 2004, Orange County has been the most diverse of 200 large metros across the US. (Source: Milken Institute, 2007). The relatively high-wages and high-multiplier effects industries in this cluster (e.g., advanced manufacturing) make it an important focus for economic development policy for Orange County.

SCREEN #2: **REGULATORY DRIVERS**

Recent federal, state and local legislation has signaled the heightened priority governments have afforded to environmentally sustainable economic development. Regulations and incentives in government spending programs provide a grounding context for the development of Orange County's green industry strategy. The well-known work of Michael Porter, published in the Harvard Business Review, provides data and rationale for how innovation is more likely to occur under regulatory constraint, leading to national economies better able to compete in emerging markets for pollution control technology.

At a federal level, the stimulus program and a spate of recent federal regulations are largely oriented around a major transformation of the nation's energy policy. Within California, AB 32, the global warming solutions act enacted in 2006, is like to drive markets for an enhanced green industry in Orange County. Additionally, AB 375, the "sustainable communities strategy" signed into law in late 2008 will drive a market for business services for land-use planning and transportation technologies throughout the state. This plan will explore some ways in which Orange County's high potential green industries may support adherence to these prominent regulations, and will also identify new markets available through these regulations, including rebates and tax credits.

SCREEN #3: **ENVIRONMENTAL/ECONOMIC DRIVERS**

Environmental and natural resource limitations again offer boundaries that will shape Orange County's green industry strategy, but also opportunities to develop innovation around areas where incentives and opportunities are high.

For example, as is true for Southern California generally, Orange County is shaped by limited access to water resources. In Orange County, this natural resource limitation has served to drive innovation in technology and processes. From this resource limitation, Orange County can derive regional competitive advantage and the potential to export technologies. Furthermore, the potential is offered for high economic benefits as costs associated with services offered by many natural resources continue to rise.

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An economic multiplier is a number used to estimate economy-wide impacts of industry-specific economic changes. Multipliers are generated from numerical or statistical models of a national or regional economy. Using existing models (e.g., IMPLAN), multipliers can be calculated for every industry sector in the Orange County regional economy.

Each multiplier can be thought of as an empirical, quantified measurement of the strength of the economic linkages between a given industry or economic sector and the rest of the regional economy. Where the extent of linkages is greater, the size of the multiplier will be higher. Also, the greater the multiplier, the greater the economy-wide dollar or employment impact in the region will be for any given stimulus to one industry or sector of the economy.

An employment multiplier summarizes the number of total jobs in the regional economy that will be created for each new job created directly by a given increase in final demand. An output multiplier represents the total value of new sales that will be stimulated in the economy for each dollar increase in final demand. And the income multiplier indicates the total amount of new income that will be generated for each dollar of income earned by workers in the industry directly affected by the increased final demand.

Green industries also often have important induced demand economic multipliers that should be considered. For example, when energy cost savings occur in the regional economy, consumers will have additional money to spend, and businesses will have additional money to invest. In many cases, this may direct spending back into stimulating the regional economy that would otherwise be lost to energy or other resource providers outside the region.

In order to maximize potential employment opportunities, it is important to understand the magnitude of potential multiplier effects in building strategies for green industries for Orange County. At this time, analysis conducted by the Orange County Business Council (OCBC), demonstrates that the energy and environment cluster is an "emerging" industry cluster in Orange County. As such, the magnitude and specific parameters of the cluster are not yet well enough defined to apply a single multiplier for the category. The GIST Plan identifies five high potential green industries for Orange County that are built from sectors that belong to several well-defined clusters with long tenures in Orange County. As an approximation of the potential multipliers if these industries develop into a full cluster, the GIST Plan provides the average value for multipliers from the underlying clusters suggested in each high potential industry.

For each of the five high-potential green industries, the GIST plan provides the average of both the Type 1 and the Type SAM multipliers for the underlying clusters. Averages are calculated from the values given in Tables 24 and 25 of the Orange County Comprehensive Economic Development Strategy (CEDS).

The Type 1 multiplier (direct effect + indirect effect/direct effect) tells us how much purchases in any given sector create additional business-related purchases from businesses outside that sector within Orange County. Businesses in a sector with a higher Type 1 multiplier are more deeply embedded economically with other businesses inside the regional economy than those with lower multipliers. The overall average Type 1 multiplier for Orange County clusters is 1.476.   Approximated Type 1 multipliers for the high-potential green industries all exceed the average, ranging from a low of 1.560 for green transportation technologies and infrastructure to a high of 1.633 for water and wastewater technologies and development.

The Type SAM multiplier (direct effect + indirect effect + induced effect/ direct effect) tells us about both additional regional business-related spending and spending from additional income generated through new or expanded employment. The overall average Type SAM multiplier for Orange County clusters is 2.040. Approximated Type SAM multipliers for the high-potential green industries all exceed the average, ranging from a low of 2.153 for green transportation technologies and infrastructure to a high of 2.220 for water and wastewater technologies and development.

As development strategies are pursued for high-potential green industries in Orange County, future research should track particular sectors that are most strongly implicated in the emerging green industries. Working with a regional input-output model, more robust approximations of multipliers for green industries could then be developed. Also, estimates should be developed in each sector for induced effects from additional spending due to consumer or business savings from higher efficiencies in energy or other resource use.

SCREEN #5: **EDUCATION, RESEARCH AND TRAINING DRIVERS**

An additional component of developing a green industry strategy is taking advantage of particular opportunities afforded through Orange County's existing schools, universities, colleges, and training facilities. Ongoing research and training initiatives are very important to laying the groundwork for innovative industries of the future. In the development of an inclusive strategy, consideration should be given to the greening of existing job training programs, professional certification programs and apprenticeship opportunities, while also ensuring that curriculum for K-12 programs is developed in tandem to prepare students for new green industry career paths. In parallel, consideration should be given to develop partnerships for new programs between colleges and universities, private companies and nonprofit agencies.

High Potential Green Industry

On preliminary analysis, we have identified the following potential areas of focus for green industry in Orange County:

1) **Green Transportation Technologies and Infrastructures**

2) **Green Building Retrofits and New Developments**

3) **Water and Waste Water Technologies and Development Strategies**

4) **Transformative Solid Waste Technologies**

5) **Transformative Technologies for Green Energy Grids**

Green Transportation Technologies and Infrastructure

The design, manufacturing and implementation of innovative technologies to reduce energy use, vehicle miles traveled (VMT's), and pollution from both transit and goods movement transportation.

Links to Existing Orange County Clusters:

- Logistics and transportation (services to implement green technologies)

- Advanced manufacturing (e.g., 336 transportation and equipment manufacturing)

- Tourism (services to implement green technologies)

- Business and Professional Services (e.g., automotive design, 5414, specialized design services)

- Construction (building new "green" transportation infrastructure)

Average Multipliers:

> Type 1: 1.560

> Type SAM: 2.153

Example Businesses:

- Design of cars to meet Pavely (state) and new CAFE (federal) standards.

Rationale:

> Policy drivers: Orange County is in close proximity to the largest seaport complex in the United States (the Ports of Los Angeles and Long Beach). These ports are engaged in a major ($2 billion) environmental initiative known as the Clean Air Action plan. There are many spillover opportunities for industries in Orange County to develop and implement clean air technologies for goods movement. There are also plans for a major transit center in Anaheim for a California state high-speed rail project. The high-speed rail bond presents opportunities across the clusters identified in this area.

> Research and education drivers of development of this industry include UCI's, National Fuel Cell Research Center, and the strong relationship of Arts Center College of Design in Pasadena with the automotive design work in Orange County.

Green Building Retrofits
and Greening New Developments

The design, manufacturing, and installation (for retrofits) of building components and technologies to improve energy, water, and construction efficiencies. The design and construction of new buildings to improve energy, water, and construction efficiencies. Potential industry involved in this area includes construction and manufacturing, as well as land use planning, architectural services and preparation of environmental documents for new developments.

Links to Existing Clusters:

- Construction (e.g., 23822 plumbing and HVAC contracting, etc.)

- Advanced manufacturing (e.g., 334512 automated control devices, etc.)

- Tourism (retrofitting of hotels, green design in new construction for theme parks, hotels, etc.)

- Business and Professional Services (e.g., architects, land use planning, consulting, energy auditors, sales & marketing)

Example Businesses:

- Solar hot water heating (manufacturing and installation of solar hot water heaters for hotel, multi-family residences, and single family homes)

- Energy efficient windows (manufacturing and installation of energy efficient windows, e.g., "Windor")

- Prefabricated construction (e.g., Birtcher/RoboBuilt)

Average Multipliers

Type 1: 1.598

Type SAM: 2.185

Rationale:

Orange County has a good climate and location to achieve cutting-edge energy efficiencies in residential and hotel construction. There is potential for a huge market for retrofits (and eventually new construction) due to the extensive residential and service economies.

Federal tax credits, and state rebates are important policy drivers. Also, the City of Los Angeles has adopted a strong green building ordinance using the U.S. Green Building Council (USGBC) Leadership in Environmental and Energy Design (LEED) system. This strengthens the regional market for companies in this area. In a similar vein, Orange County might consider a green building initiative. Several localities around the U.S. have adopted ordinances using LEED or other scoring systems. Often, the first initiative is to strengthen requirements for government buildings. The State of California also has a green building initiative for state government buildings.

Water and Wastewater Technologies and Development Strategies

The design, manufacturing, installation and operation of innovative technologies and practices to recycle, conserve, and produce water. This includes strategies and knowledge in the area of "low impact development" (LID).

Links to Existing Clusters:

- Construction (e.g., specific classifications in 237 heavy & civil engineering construction.)

- Advanced manufacturing (e.g., 334512 automated control devices, filtration devices, etc.)

- Business and Professional Services (e.g., landscape architects, landuse planning, environmental consulting)

- Biotechnology/Nanotechnology (e.g., filtration devices)

Average Multipliers

Type 1: 1.633

Type SAM: 2.220

Example Businesses:

- Landscape Architecture (Design and build landscaping businesses that provide drought resistant plants and/or integration of graywater or rainwater harvesting systems)

- Water Recycling and Desalination (Design, manufacturing, installation and operation of innovative filtration technologies for recycling or desalination)

Rationale

Water shortages are a global problem, but with uncertainties in imported supplies there is a strong regional focus on the issue in Southern California. Orange County may be well positioned to lead in this area. Orange County has existing expertise in water recycling at the Orange County Sanitation District and the Irvine Ranch Water District.

There are also varied hydrologic geographies within Orange County, running from North County to South County, and from mountains to the Coast. In some areas groundwater is a viable resource, and other communities must depend almost entirely on imported water. Orange County also faces an economic imperative to protect coastal water quality due to the strong beach economies linked to the hospitality and tourism cluster. It is also important to note opportunities through the Great Park project. With so substantial a park acreage under development for many years, there will be many opportunities to use innovative approaches to recycle and conserve water in the landscape. Overall, within Orange County there are strong demands and opportunities for economic development around innovative water and wastewater technologies.

Transformative Solid Waste Technologies

The design and operation of innovative systems to handle municipal solid waste, reduce pressure on landfills and better use streams of available material. This includes maximizing recycling of commonly recycled materials, and waste to energy technologies like cellulosic biofuels that do not rely on incineration.

Links to Existing Clusters:

- Advanced manufacturing (e.g., manufacturing of waste sorting, waste crushing or dewatering systems)

- Business and Professional Services (e.g., waste management and remediation services 562)

- Biotechnology/Nanotechnology (e.g., development of enzymes and organisms to digest waste)

- Hospitality and Tourism (development of waste systems for restaurants, hotels, theme parks, etc.)

Average Multipliers

Type 1: 1.607

Type SAM: 2.179

Example Businesses:

- Installation and maintenance of on-site innovative waste systems (e.g., dewatering systems, source separation technologies).

- New energy/fuel businesses from waste hauling and remediation (e.g., biosolid waste from water treatment plants processed as an add-on fuel for cement plants).

Rationale:

With strict air pollution regulations and a lack of landfill space, the Southern California region is under increasing pressure to handle its municipal solid waste. Current plans involve fairly expensive rail transport of solid waste for landfilling in the desert. Even biosolid waste from water treatment plants is often currently trucked out of the region.

In response to this, many municipalities have adopted aggressive solid waste management programs. The City of Los Angeles, for example, has declared its intention (via City Council Ordinance) to develop a zero waste future. This program is just beginning: technologies and engineering plans need yet to be proven at scale. In Orange County, private waste companies may provide expertise and leverage to transform solid waste technologies. For example, Waste Management International has announced plans to fundamentally transform its operating model from that of a "waste" company to a "materials" company. Such plans will require innovative technologies to increase recycling rates and transform waste to energy without relying on incineration. The hospitality and tourism cluster in Orange County provides a good potential market to develop innovative businesses in this area.

Transformative Technologies for Green Energy Grids

The design and manufacturing of technologies for storage, transmission and conservation of electrical energy. This includes smart grid development, fueling stations, fuel cells, and distributed generation technologies.

Links to Existing Clusters:

- Advanced manufacturing (e.g., 335311, power distribution and specialty transformer manufacturing; 334519, other measuring and controlling device manufacturing)

- Business and Professional Services (consulting & planning for grid development and technologies at the facility level)

- Biotechnology/Nanotechnology (Development of fuel cells, improved storage devices)

- Information Technology (e.g., software for better system control, green data centers, etc.)

Average Multipliers

Type 1: 1.590

Type SAM: 2.177

Example Businesses:

- Manufacturing and installation of fuel cells or other technologies for non-peak energy storage

- Manufacturing and installation of technologies to conserve electricity in information and communication technologies (e.g. "green data centers")

Rationale:

In addition to price pressures on conventional energy generation from California's climate change legislation, AB 32, the state has also adopted a strong renewable portfolio standard (RPS). This requirement calls for 20% renewable energy generation for power sold in the California by 2010. The state is also considering an increase in the RPS to 33% by 2020. Operating the electrical grid with much higher fractions of renewable power creates the demand for new technologies and services to manage the grid. New ways of storing electricity will need to be developed so that renewable energy can be stored to meet peak power demands. Also, there will be many more inputs of energy on the grid from distributed generation in renewable technologies. This means that there will be new control systems that must be developed to ensure grid stability.

The R&D, and current industrial base in Orange County is positioned to help to meet these demands. In particular, the National Fuel Cell Research Center (NFCRC) at UC Irvine presents opportunities for business development within the advanced manufacturing, information technology, and biotechnology/nanotechnology sectors within Orange County.

GOAL 1:
"Develop infrastructure as a priority with an eye for economic development support"

Support the development of low-cost energy and maintain energy reliability

"Having reliable and affordable energy for economic growth is essential for Orange County to prosper and its workforce to succeed. New State legislation such as AB 32 to combat global warming may make it more difficult for current power suppliers to operate, and new sources of energy will need to be found. For Orange County to continue to succeed, policymakers must collaborate with energy suppliers such as Southern California Edison, The Gas Company/Sempra Energy, and San Diego Gas and Electric to ensure that low-cost, reliable energy resources are available for businesses and residents of Orange County into the long-term future."

The green industry strategy must contribute to energy conservation and new local sources of energy to create an improved business climate through enhanced energy reliability and lower energy (operating) costs.

Support the development of low-cost water and maintain water reliability

"Since Orange County is located in the semi-arid region of Southern California, water cost and reliability are essential issues to ensure the resources necessary for population and economic growth are available for Orange County. Investments in infrastructure are needed to ensure affordable and reliable water supplies are essential. Without these investments, water quality will decrease, beach closures will increase as pipes break more often and the economy of Orange County will suffer. Taking pro-active steps to anticipate the future on the basic issues of water availability will go a long way towards ensuring success."

Green industry should focus on the crucial water challenges that face the Orange County economy. In particular, expertise should be developed in public/private partnerships for water industries. These include expertise in water recycling, distributed infrastructure (rainwater harvesting and graywater), and low impact development (LID).

GOAL 4:
"Support for Innovation, Economic Clusters Development and venture capital creation"

"To ensure that Orange County's business climate and accessibility to quality employment, policies will be established to encourage innovation supported by venture capital to enhance economic clusters that Orange County excels in order to create greater economic opportunities for disadvantaged residents."

Encourage the formation of new businesses to innovate in green industry. Look for new businesses that can serve greening initiatives in existing clusters. Encourage firms in existing economic clusters to explore new green lines of businesses with high potential for value added to the regional economy.

GOAL 3:

"Encourage and Support Affordable Housing for Workers in Orange County"

With appropriate housing available, more workers will be able to live where they work and work where they live; i.e., fewer people commuting from outside the county for jobs.

The green industry strategy should work in support of affordable workforce housing. The synchronization of the regional housing needs assessment process with the sustainable community plans under SB 375 presents an opportunity to plan for transit oriented development and higher density, to create better jobs/housing balance. Orange County has an important industry in environmental planning and land-use consulting that should be tapped to plan for this in Orange County. These services could later be sold throughout the state.

Next Steps

FOCUS

The following projects would allow for the amassing of detailed information in specified areas to lend additional focus to the GIST as needed:

1) Identify Best Practices for Orange County local government on green initiatives/programs (leading by example through implementation). See GIST Appendix on page 22

2) Work with OCWIB to link green industry initiatives to potential sources of funding *(*ongoing)*:

    a. **NEAR TERM** (1-2 years):
    Federal spending; Federal and state tax credits & rebates; Public/Private partnerships. Early V.C.-type Investment.
    b. **MEDIUM TERM** (2-5 years):
    State Bond (Infrastructure) spending; Increased Private Investment
    c. **LONG-TERM** (5+ years):
    Private Investment; New Residential Developments

CONNECT

The following projects will begin the process of connecting Orange County to high potential green industry opportunities. They are ordered for a suggested timeline of implementation, but several of these projects can roll out concurrently:

1) Recruit for the Advisory Group within a wide range of disciplines and industries to provide input on plan, offer prospective employment locations, and provide program recommendations

2) Reach out to existing green OC businesses to gather information on current job training needs

    a. Isolate 5-10 companies within each of the 5 Industry Areas of Focus
    b. Select a mix of small, medium, and large-sized firms, as representative as possible of different geographic areas within the county
    c. Conduct interviews with managers on employment and training needs

3) Reach out to OC companies in conventional industry clusters associated with high potential green industries to gather information for green job development

    a. Isolate 5-10 major companies within the clusters identified in each of the 5 Industry Areas of Focus
    b. Select a mix of small, medium, and large-sized firms, as representative as possible of different geographic areas within the county
    c. Conduct interviews with managers to identify opportunities for "greening", and green job development

4) Identify existing training programs, certifications and apprenticeships in Orange County

    a. Select a mix of organizations with educational and training programs in the 5 Industry Areas of Focus
    b. Work with selected organizations to identify opportunities to incorporate green-focused training and re-skilling programs

5) Reach out to local Community Colleges, Cal State schools, & Universities through an Advisory Board member(s) to evaluate any existing green industry curriculum

    a. Through Advisory Board member(s), distribute findings and suggestions to these local educational institutions, with an eye to shaping future curriculum to focus on green careers and the greening of current training knowledge

    b. Work with the Department of Education on connecting with educational institutions to offer financial incentives to students looking to train for green jobs

6) Contact utilities and Parks & Recreation departments to identify and foster opportunities for youth exposure to sustainability concepts (retrofitting, energy audits, water management)

7) Generate interest through the involvement of the Governor's office and others in Sacramento to bring OCWIBs to the forefront of the movement. (SUGGESTIONS: a kick-off for the Green Jobs award grant involving Governor Schwarzenegger in OC)

ACT

With job creation and training initiatives in place, promote OC green industries through community and press outreach:

1) Coordinate volunteer programs and events to generate awareness of green industry initiatives

2) Highlight completed projects among the community, citing details about companies, individuals involved, tax breaks awarded and contact information to apply for involvement

3) Work with Public Relations and Communications individuals within associated Orange County institutions to communicate successes to regional and national press outlets

MONITOR

Monitor green industry activity in Orange County to ensure continued relevance and successful implementation of the GIST plan:

1) Record best practices within communities and companies, and share this as a resource
    a. Consider the creation of a web platform to host green job training and employment opportunities
    b. Consider hosting a community event and/or webinar series to share successes and opportunities across local businesses

2) Conduct periodic studies to monitor green labor force on aspects such as job growth and retention rates

3) Utilize data to adjust programs where necessary, and determine ongoing opportunities for OCWIB Green Ad Hoc Committee to provide support

Orange County Peer Cities Best Practices Review

To follow is a summary of selected environmental initiatives in Orange County's peer cities, including: San Francisco, Seattle, Los Angeles, San Jose, Minneapolis, Austin and Boston. Programs highlighted include those developed by local governments, corporations and nonprofit agencies, under the broad categories of: Green Building, Sustainability Indicators, Water Management, Green Job Training, CleanTech, Waste Management, and Other Notable. All information below has been extracted from program websites. For more detailed program information, links to these websites have been provided at the end of each section.

GREEN BUILDING PROGRAMS

As the environmental impact of buildings has become more apparent, green building practices with a focus on incorporating stringent environmental standards in the design process, have gained momentum across major cities in the U.S. The push for greener buildings started in 1996, when the Environmental Protection Agency began using an Energy Star rating system to measure how efficiently homes and businesses were using energy. Then, in 2000, the US Green Building Council (USGBC) developed the now widely used Leadership in Energy and Environmental Design (LEED™) rating system with four levels: Certified, Silver, Gold and Platinum to provide standards for water, energy and atmosphere, materials and resources, indoor environmental quality and design innovation.

Boston Green Building Program

Summary: Boston became the first major city in the United States to incorporate green building requirements into its zoning code for large development projects.

Requirements:

- Use zoning to require private development projects over 50,000 sq. ft. to be designed and planned to meet the U.S. Green Building Council's LEED™ "Certified" level
- New or renovated municipal buildings are required to meet Silver LEED™ standards
- New projects are to exceed the basic standard for energy performance by 14% and major renovations to exceed standard by 7%

For more information:
http://www.bostonindicators.org/IndicatorsProject/Environment/Default.aspx

San Francisco's Green Building Program

Summary: San Francisco has a number of green building initiatives for both private and municipal sectors. Details on legislation and initiatives are below. Their initiatives incorporate both the USGBC's LEED™ standards as well as the municipality's own "Greenpoint" standards, which have been developed by their Green Building Task Force.

Requirements:

Private Sector

- 2008 Green Building Ordinance - Requires new buildings constructed in the city to meet green building standards developed by the Mayor's Green Building Task Force.
- LEED™ Gold Priority Permitting Program - provides an expedited permit review in the Planning Department, Department of Building Inspection, and Department of Public Works.
- San Francisco's Rainwater Harvesting Rules - Homeowners are able to legally disconnect their downspouts and use rainwater for non-potable purposes both inside and outdoors.

Municipal Sector

- Resource Efficiency Requirements and Green Building Standards Ordinance - requires all city building projects (new construction and major renovations over 5,000 square feet) to achieve LEED™ Silver certification from the U.S. Green Building Council.
- Resource Conservation Ordinance - bans the purchase or use of products that contain polyvinyl chloride (PVC) by city departments when non-chlorinated plastic alternatives are available.
- Tropical Hardwood and Virgin Redwood Ban - prohibits the city from purchasing and using wood from tropical rainforests and virgin redwood products.
- Arsenic-Treated Wood Ban - prohibits the city from purchasing and using wood that is treated with arsenic-based wood preservatives
- 2005 Residential Green Building Resolution - endorses the California Model Green Home Building Guidelines.

For more information:
http://www.sfenvironment.org/our_programs/interests.html?ssi=8&ti=19&ii=186

Seattle's Green Building Task Force

Summary: As part of his 2008 State of the City address, the Mayor identified an initial target of achieving an increase of 20% in the energy efficiency of Seattle's new and existing buildings. The Green Building Task Force was also established as a group from various disciplines (real estate, building operators, green builders, low-income housing providers and advocates, historic preservation advocates, energy suppliers, financial institutions) to provide guidance on appropriate policy mechanisms that the city can employ to achieve these goals. In addition, the following will likely influence the near future of the green building landscape in Seattle:

- Construction growth through 2009 will include over 13 million square feet of residential (single and multifamily) construction, and over 5 million square feet of commercial and industrial construction.
- The number of green roofs in Seattle has been steadily increasing, with many at publicly accessible facilities.

For more information:
http://www.seattle.gov/dpd/greenbuilding/

Austin's Green Building Program

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Summary: Austin has been implementing green building technologies since 1993. In 2000, a resolution was passed by city council requiring all municipal buildings to meet the US Green Building LEED™ silver rating.

For more information:
LEED™ Resolution
http://www.cityofaustin.org/edims/document.cfm?id=110795

Green Infrastructure Resolution
http://www.cityofaustin.org/edims/document.cfm?id=110796

Los Angeles Green Building Plans

Summary: Taking the lead from Austin (?), The City of LA will soon mandate all new city owned buildings, all new buildings over a certain size, and all retrofits of existing City buildings to meet LEED™ standards.

For more information:
http://lacity.org/villaraigosaplan/EnergyandEnvironment/GreenBuilding/index.htm

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SUSTAINABILITY INDICATORS

In the last decade, many cities have instituted sustainability indicator programs. The programs vary from narrow focus on municipal activities, to a wide-ranging focus on environmental values throughout the city, as well as beyond the city's borders (e.g., "ecological footprinting"). Sustainability indicator programs typically measure progress in broad categories, including economic, social and ecological objectives. Reporting is often done using a scorecard approach that gives a grade for each indicator.

Boston Sustainability Indicators Project

Summary: The Boston Foundation is tracking progress toward civic goals in the greater Boston metropolitan region across ten broad areas (e.g., economy, arts, environment, etc.). The indicator project is a partnership with the City of Boston and the metropolitan planning council (i.e., regional government). In terms of environment, the indicators tack progress across ten categories ranging from energy to sustainable open space.

For more information:
http://www.bostonindicators.org/IndicatorsProject/Environment/AtAGlance.aspx?id=3530

Sustainable Seattle's Indicators into Actions Project

Summary: Since the 1990s, Sustainable Seattle has been working towards developing city and regional indicators. In addition to measuring and tracking progress on environmental goals, their program also engages communities through the 'Adopt an Indicator' online fundraising tool. Seattle has used this

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unique model to draw in individuals, community groups, businesses, and agencies to adopt indicators such as the Wild Salmon indicator, the Stream and River Flows Indicators, and the Impervious Surface Changes Indicator as monetary contributions to the general fund.

For more information:
www.sustainableseattle.org

Austin's Climate Protection Program

Summary: Under the Austin Climate Protection Program established in 2007, the city has determined 5 areas of action: 1) municipal, 2) utilities, 3) homes & buildings, 4) community, 5) 'go neutral' for which a report will be produced annually presenting inventories and cataloging successful accomplishments and collaborations that have provided carbon reductions. Austin's goal is to be carbon neutral by 2020.

For more information:
www.ci.austin.tx.us/sustainable/

Santa Monica's Sustainable City Plan

Summary: Santa Monica's Sustainable City Plan is a blueprint for ensuring the city meets its current environmental, economic and social needs without compromising the ability of future generations to do the same. The plan has concrete goals and targets for tracking Santa Monica's current progress on the plan, including a report card to track successes and sustainability trends under the following categories: resource conservation, environmental & public health, transportation, economic development, open space & land use, housing, community education & civic participation, and human dignity.

For more information:
http://www.smgov.net/departments/ose/

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WATER MANAGEMENT

To address major issues related to water such as supply and sanitation, many cities are pulling together creative ways to source and treat water for human consumption, industry, energy production, and to support ecosystems.

San Jose's South Bay Water Recycling

Summary: San José's South Bay Water Recycling recycles about 11 million gallons per day, reaching customers through 110 miles of dedicated piping, serving the cities of Milpitas, Santa Clara and San José. During the summer months, an average of 15 million gallons of recycled water are produced and distributed to over 550 customers per day. Water used by residents and businesses in indoor faucets, tubs, showers, and toilets is treated at the San Jose/Santa Clara Water Pollution Control Plant. Currently,

recycled water in the South Bay is used primarily for turf irrigation at golf courses, parks, schools, and sports complexes, with a smaller amount used for agricultural lands and industrial processes.

Over the next 15 years, San Jose aims to achieve 100 percent beneficial reuse of the wastewater they capture and treat – 100 million gallons per day – through a combination of water conservation, expanded use of recycled water, and habitat protection.

For more information:
http://www.sanjoseca.gov/sbwr/

City of Austin's Water Program

Summary: To tackle the issue of water supply, the City of Austin has formed a unique partnership with LCRA (Lower Colorado River Authority) to plan a long-term water supply for the City of Austin- up to 250,000 acre-feet of additional water through 2100 by evaluating the appropriate timing and amount of water supply the city will need based on demand projections and explore various water supply alternatives. In addition, The Austin Water Utility has begun to calculate wastewater costs on amount of water residences use during three winter billing months (very little water used during these months) as a good measure of the volume flowing through wastewater system. Further, the city has imposed mandatory watering days to support these water supply initiatives.

To regulate green infrastructure water quality controls, new criteria have been developed and formally adopted including bio-filtration ponds, rainwater harvesting, porous pavement, rain gardens and vegetative filter strips.

For more information:
http://www.ci.austin.tx.us/water/

Seattle's Restore Our Waters Project

Summary: Recognizing that Seattle's 40-plus waterways and lakes provide jobs, critical fish and wildlife habitat, and recreational opportunities, the "Restore Our Waters" project is Seattle's commitment to promote partnerships that protect and improve creeks, lakes and the Puget Sound. Through, 'Slow the Flow' - The city uses detention ponds, creek channel widening and other projects to reduce the flow of storm water. To prevent pollution, the city works with businesses and residents to prevent water pollution and to clean up the hazardous sediments that build up in waterways. These projects also work to restore habitat for migrating salmon that live in these waterways. Finally to support residents in their neighborhoods, the city offers financial incentives, technical assistance, education and training to help private property owners and others restore habitat and keep pollution out of our water bodies.

For more information:
http://www.seattle.gov/mayor/issues/row/

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GREEN JOB TRAINING PARTNERSHIP PROGRAMS

Training programs specifically aimed at preparing individuals for the new green economy have begun to emerge. Many programs are collaborative partnerships between educational institutions, non-profit agencies, local governments and corporations to ensure the new generation of green collar careers are prepared with the necessary skill set to provide value in this new economy.

Oakland Green Job Corps

Summary: Designed by the Ella Baker Center, an Oakland-based non-profit organization, the Oakland Green Jobs Corps is a job training and employment program that provides "green pathways out of poverty" for low-income adults in Oakland. This program prepares trainees for careers in the Bay Area's green industries, including energy efficiency, green construction and solar.

The first cycle of the program will train 40 young adults and will incorporate four stages: recruitment, pre-education and training, green-collar skills training and education, and on-the-job training with green employers. The program will place graduates in full time jobs with solar firms and green construction contractors.

Partners include:

- Laney College: a regional community college providing green vocational education
- Cypress Mandela Construction Training Program: a pre-apprenticeship program that serves young adults with barriers to employment, and has strong connections to the building trades unions.
- Growth Sector, Inc.: a workforce intermediary that connects employers, government, and community agencies.

For more information:
http://www.ellabakercenter.org/page.php?pageid=32

Pacific Gas and Electric Co.'s PowerPathway Program

Summary: Based in San Francisco, Pacific Gas and Electric Company (PG&E) is one of the largest combination natural gas and electric utilities in the United States. The PowerPathway program, offered at community colleges throughout California, trains and prepares individuals for high-demand positions at PG&E and throughout the energy sector.

Programs include:

- Bridge (a stand-alone course usually 10-16 weeks in length)
- Endorsed Program (a community college certificate or AA program that is 1- or 2-years in length)
- Capstone (additional coursework for students who have completed a prerequisite AA or certificate)

The PowerPathway program is made possible through extensive collaborations with labor, industry, the workforce development system, community-based organizations, foundations and California educational institutions.

Current Partners and Funders Include:

- GP Growth Sector
- Fresno Workforce Investment Board
- San Francisco Workforce Investment Board
- San Mateo Workforce Investment Board
- Greater Sacramento Urban League
- Urban university
- Workforce Institute, San Jose/Evergreen Community College
- State Center Community College District
- California Corporate College
- Butte Community College
- City College of San Francisco
- College of San Mateo
- Fresno City College
- Laney College
- American River College
- San Jose/Evergreen Community College District
- Los Medanos College
- Palomar College
- Fresno Workforce Investment Board
- Laney College
- PG&E Corporate Contributions
- San Francisco Workforce Investment Board

For more information:
www.pge.com/careers/powerpathway/

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CLEANTECH PARTNERSHIPS

Cleantech partnerships engage research and educational facilities, private companies, and local governments to support research on emerging green technologies, and to foster the expansion of green tech industries in a given region. San Diego has a well-developed Cleantech Initiative, and a Cleantech partnership is also emerging in Los Angeles.

San Diego's Cleantech Initiative

Summary: San Diego's Cleantech Initiative is an effort to promote the expansion, attraction and retention of businesses that develop products and technologies that provide environmentally sustainable solutions.

The initiative is supported by the UCSD CONNECT program, a network whose aim is to grow new technology clusters in San Diego. The CONNECT program acts as a neutral broker in facilitating new relationships and driving the flow of new ideas, knowledge, and partnerships among business, industry, academia, research, investors, and government.

Selected Elements of the Cleantech initiative:

San Diego Clean Generation Program Solar Financing Program

- San Diego Clean Enterprise Program, providing interest-free loans to small-business for energy efficiency retrofits
- San Diego Center for Algae Biotechnology (SD-CAB) (UCSD, SDSU, SIO, Scripps Institute and the Salk Institute), involving the region's 15 algae companies
- Cleantech Innovation Challenge - An initiative to accelerate the commercialization of clean technologies out of university labs. Program participants include UC San Diego, SDSU, University of San Diego, with seed funding from the City of San Diego & Qualcomm Inc (a high-tech company in the region)

For more information:
http://globalconnect.ucsd.edu/about/index.cfm

http://www.sandiego.gov/economic-development/business-assistance/cleantech/

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WASTE MANAGEMENT

Under the Resource Conservation and Recovery Act (RCRA), the Environmental Protection Agency regulates all waste produced from households, and produced through industrial and manufacturing practices. Though 'overseen' at a Federal level, local level management of hazardous and non-hazardous waste is crucially important, as communities are dealing with ecological risks that come with over consumption and improper disposal of waste. As such, many local waste authorities are focusing on the creation of zero-waste strategies.

Austin's Zero Waste Plan

Summary: Through Austin's Zero Waste Plan, the city has established a goal to reduce by 20% the per capita solid waste disposal to landfills by 2012 and zero waste by 2040. In order to achieve this goal, they continue to stand behind the following action items:

- Expanded and improved local and regional recycling, and composting
- Determined new rules and incentives to reduce waste disposal
- Preserved land for sustainable development and green industry infrastructure
- Advocated for manufacturer responsibility for product waste; and bans on problem materials

- Established education and advocacy programs for a zero waste sustainability agenda and public meetings to facilitate community involvement.

For more information:
http://www.ci.austin.tx.us/sws/default.htm

San Francisco Zero Waste Program

Summary: San Francisco's 3-cart recycling program is designed to make recycling easier, reduce waste, and control litter. In addition to the traditional trash bin, there is a blue cart for recyclables, including all bottles, cans, and paper, and a green cart for all compostable items, such as food scraps and yard trimmings. Today, San Francisco recovers 72 percent of the materials it discards, and aims to be zero waste by 2020.

For more information:
http://www.sfrecycling.com/residential/index.php?t=r

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OTHER NOTABLE/LOCAL GOVERNMENT DEMONSTRATION PROJECTS

Bay Area Green Business Program

Summary: The Bay Area Green Business Program verifies that businesses meet and exceed the standards of environmental performance required by existing regulations. Their partnership with government agencies and utilities helps local businesses comply with all environmental regulations and take additional actions to conserve resources, prevent pollution, and minimize waste. After establishing compliance, businesses must conduct basic audits and implement best practices in areas of energy, water, solid waste, and pollution prevention. Customized, sector-specific standards are in place for seven sectors ranging from auto repair to restaurants. Over 1,600 businesses and public agencies have been certified since 1997. Once certified businesses receive a bay area green business seal and logo that can be applied to storefronts and used in promotional materials.

The Program was developed by Bay Area local governments in collaboration with US EPA, Cal EPA Department of Toxic Substances Control and the business community. The Association of Bay Area Governments coordinates the Program, which is implemented by Green Business Coordinators in 9 participating counties. The regional and local programs are funded by their partners, including local and regional government agencies, utilities, special districts and nonprofit organizations that promote environmental compliance, pollution prevention and resource conservation. Some funding also comes from government and non-profit foundation grants.

For more information:
http://www.greenbiz.ca.gov/AboutUs.html

Seattle's 'IMCOOL: How Cool is Your City?' Campaign

Summary: The program is produced through a partnership between the cities of Seattle, Salt Lake City, Boston and Minneapolis with assistance from Local Governments for Sustainability. This 'ready to go' climate action campaign was designed to inspire citizens and other cities to reduce greenhouse gas emissions. Provides a free toolkit containing outreach materials such as posters, flyers, email newsletter templates, and a website framework.

For more information:
http://www.imcoolcampaign.org/get-started/strong-partnership-events

Seattle's Environmentally Responsible Purchasing Program

Summary: Seattle has established a city-wide environmentally responsible purchasing program that states: "The City shall promote the use of environmentally preferable products in its acquisition of goods and services." In purchasing decisions, departments are directed to consider life cycle effects from: pollution, waste generation, energy consumption, recycled material content, depletion of natural resources, potential impact on health and nature.

For more information:
www.seattle.gov/ENVIRONMENT/

Los Angeles City Sustainability Plan

Summary: A comprehensive plan conducted by the Environmental Affairs Department is being completed during the 2008-2009 fiscal year. During this time, the department will coordinate with designated City department "Sustainability Liaisons" and also with other agencies, such as the Los Angeles County Metropolitan Transportation Authority (Metro), to ensure a workable, regional approach to sustainability.

For more information:
http://www.lacity.org/ead/environmentla/

Million trees LA

Summary: A cooperative effort between the City of Los Angeles, community groups, businesses, and individuals working together to plant and provide long-term stewardship of one million trees planted where they're needed most.

For more information:
http://www.milliontreesla.org/

Los Angeles and San Pedro Bay Ports Clean Air Action Plan

Summary: The ports of Long Beach and Los Angeles adopted the landmark San Pedro Bay Ports Clean Air Action Plan (CAAP) in November 2006 to curb port-related air pollution from trucks, ships, locomotives and other equipment by at least 45 percent in five years. A model for seaports around the world, the CAAP is the boldest air quality initiative by any seaport, consisting of wide-reaching measures to significantly reduce air emissions and health risks while allowing for the development of much-needed port efficiency projects.

For more information:
www.cleanairactionplan.org/

Los Angeles Green Energy Projects

 Summary: The City of LA has recently embarked on a number of projects to meet the goal for the city to use 20% green energy by 2010. These projects include, Southern CA Edison's construction of a solar farm in the Mojave Desert as well as a pilot project where biosolids from local sewage treatment plants are converted into clean energy. Solid waster is disposed in abandoned oil wells. As the waste decomposes, methane is produced which powers a fuel cell that generates green electricity.

For more information:
www.ladwp.com