

Green Is Gold: A Strategy for Developing the Richmond Green Economy



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Introduction

Why a Green Economic Development Strategy for Richmond?

With the US and global economy struggling to emerge from the worst recession since the Great Depression, green industries are some of the brightest stars in a very dark night. Renewable energy, energy efficiency and many other green sectors have continued to grow as the general economy has stagnated. With the increasing cost of extracting fossil fuels, the implementation of new environmental policies including a possible price on carbon at the State and Federal levels, and a growing cohort of environmentally conscious consumers, these sectors are projected to continue to add jobs at a high rate. Under these circumstances, as with most economic development strategies, a green economic development strategy is a chance to grab a piece of a growing pie. However, beyond the growing pie, there are several reasons why Richmond in particular should be interested in such a strategy.

As this report will show, Richmond has strengths that make it a good place for green industries to thrive. The city encompasses a wide variety of competitively priced space that meets the needs of green businesses. Richmond's location between the East and North Bay attracts green businesses that want access to both regions. The city's port, rail and highway infrastructure provides valuable benefits for goods movement and commuting. Existing industries and businesses support each other and new green industries. Lastly, Richmond's internationally renowned green workforce development programs provide a local skilled workforce for green businesses.

Green economic development should also serve many of Richmond's particular needs. Green industries appear to offer quality jobs that are accessible to the neediest Richmond residents who often have barriers to employment. Green industries will help Richmond diversify its tax and employment base away from its current dependence on carbon intensive industries. As green industries replace dirty industries, Richmond will be able to remedy some of its history of local pollution and poor environmental health. Aggressively promoting a green economy in Richmond can also help generate positive publicity for the city and give balance to and start to improve what currently are one-dimensional, negative perceptions based on high crime rates.

Richmond is also pursuing this strategy because Richmond residents, City staff and community leaders care deeply about preventing catastrophic climate change. The City of Richmond is already implementing local environmental policies that will reduce local pollution and the city's carbon footprint. These policies will also generate new work and require old work to be done in new ways. By incorporating these policies into a larger green economic development strategy, Richmond can capture much of the job generation and revenue created by these policies for its own residents. Richmond can help encourage other communities to do their part on climate change by becoming a successful model for minimizing local costs and maximizing local economic benefits of carbon reduction and other environmental improvements.

This report charts a course of implementation to create a new, green economy in Richmond that will achieve these goals.

Methodology and Structure

This report gathers information from a variety sources. A review of the existing green economy literature with a focus on previous studies of the East Bay and Richmond provided a baseline for this report. This baseline is enhanced with economic analysis using business and employment data for Richmond, provided by the East Bay EDA, and publicly available data at the County and State level all broken down by sector and compared over time. These data are supported by qualitative research including interviews of 26 employers related to the Richmond green economy. Thirteen of these employers were interviewed by City staff and contractors, 9 were interviewed by the nonprofit group East Bay Alliance for a Sustainable Economy (EBASE) and 4 were interviewed by both groups on separate occasions. Comments from EBASE interviews are left anonymous in this report.

Of the businesses interviewed, 21 are identified as Richmond green businesses. One interview was with a green business that left Richmond. Two interviews were with green businesses considering locating in Richmond. Two interviews were with Richmond businesses that do not offer green products or services, but are working hard to green their operations. The City also interviewed 12 potential regional and national partners for local green economic development. Lastly, from the literature review, interviews and online research, the City developed 13 best practice green economic development case studies from other regions.

A special note should also be made here about Chevron. Chevron is Richmond's largest greenhouse gas emitter and arguably its largest polluter generally. At the same time, Chevron's Engineering and Technology Division employs over 100 renewable energy researchers in Richmond making it the fourth largest green employer in the city. Furthermore, as the largest energy company in the Bay Area, and with special interest in biofuels, Chevron will play a critical role in any green economy future for Richmond. For these reasons, Chevron Engineering and Technology is included in this report as a Richmond green business. This is not an endorsement or comment on Chevron's general environmental practices.

The organization of the report flows from the research. Chapter 1 conducts location quotient and shift share analysis for both specific green industries and the broader local economy. It also lays out the functional definition of green businesses for the purposes of this report. Chapter 2 takes information from business and other interviews, the literature review and data analysis to present a strengths, weaknesses, opportunities and threats (or SWOT) analysis. Chapter 3 looks at particular trends for certain green sectors and certain neighborhoods within Richmond. Chapter 4 presents the 13 case studies developed by the City. Chapter 5 presents a green economic development strategy and recommends steps for implementation.

Chapter 1: Richmond Industries & Trends

Due to restrictions on the availability and quality of citywide economic data, Table 1 shows trends in employment by sector for Richmond for only a very recent period, 2007 to 2010, essentially covering the recent economic downturn. Data for the City of Richmond are provided by the East Bay EDA, which includes public (though sometimes inaccurate) records of employment for each Richmond employer. This report has attempted to "clean" local Richmond data based on qualitative assessments and interviews with local employers. These data do not

include self-employed workers. Data for the State of California come from the State Employment Development Department. The State of California data for 2010 are actually two quarters earlier (3rd Quarter 2009) than the Richmond data. Despite the limitations of these data, some important basic findings about the state of Richmond's economy can still be drawn.

These findings use two terms that should be explained. A location quotient (LQ) shows the concentration of local employment in a certain sector. Specifically, it gives the ratio between the percent of local employment made up by the particular sector and the percent of the larger (in this case the State of California) economy made up by that sector. A high LQ indicates a high local concentration in that sector. A differential shift (DS) shows local growth in a particular sector relative to that sectors growth in the larger economy and relative to the larger economy's overall growth. A high DS indicates that a sector is doing better locally than it is in the larger economy.

By 2010, the largest employment sectors in Richmond were Manufacturing, Retail, and Public Administration. The most concentrated industry relative to California (shown by the location quotient (LQ)) was, by far, Oil and Gas. Utilities and Logistics LQ's show lower, but still impressive concentrations. Richmond has low employment concentrations in Agriculture, Information, most professional services, and hospitality and leisure industries.

Richmond businesses have weathered the recession relatively well. From 2007 to 2010, the city's overall employment level stayed essentially the same while state employment shrank by 8 percent. The strongest positive growth relative to the state (differential shift (DS)) came in Construction. Thanks to the individual employer data, this study can identify that the increases in construction employment come primarily thanks to growth in local solar installation and green building businesses which offset statewide declines in the traditional construction industry due to the mortgage crisis. Wholesale Trade and Administrative and Waste Services also had high positive DS's. Other sectors performed poorly relative to the state average including Agriculture, Health Services, and hospitality and leisure industries. The short time period for this data likely misses some longer term trends. For example, anecdotal evidence suggests that Richmond has gained significant employment in retail, health services, and public administration over the last decade.

Table 1: Richmond Location Quotient and Shift Share Analysis

	Richmond			California			DS	LQ 2010
	2007	2010	Change	2007	2010	Change		
11 Ag & Landscaping	480	105	-78%	386,025	430,619	12%	-90%	0.12
21 Oil and Gas	1,580	1,584	0%	24,935	23,432	-6%	6%	32.98
22 Utilities	432	432	0%	57,882	60,036	4%	-4%	3.51
23 Construction	1,402	1,808	29%	887,963	610,936	-31%	60%	1.44
31-33 Mfg	4,240	4,060	-4%	1,452,100	1,265,246	-13%	9%	1.57
42 Wholesale Trade	1,591	1,879	18%	716,172	638,677	-11%	29%	1.44
44-45 Retail Trade	3,285	3,416	4%	1,683,714	1,490,483	-11%	15%	1.12
48-49 Logistics	2,138	2,307	8%	428,542	394,222	-8%	16%	2.85
51 Information	381	388	2%	470,846	436,110	-7%	9%	0.43
52-53 FIRE	1,210	1,077	-11%	899,933	785,384	-13%	2%	0.67
54 PST Services	1,518	1,506	-1%	1,059,233	990,397	-6%	6%	0.74
56 Admin & Waste Services	1,483	1,602	8%	992,338	831,604	-16%	24%	0.94
61 Educational Services	240	242	1%	258,364	259,108	0%	1%	0.46
62 Health & Social Services	1,103	1,014	-8%	1,370,049	1,419,677	4%	-12%	0.35
71 Arts, Entertainment & Rec	352	342	-3%	250,055	251,571	1%	-3%	0.66
72 Accom. & Food Services	518	487	-6%	1,302,056	1,254,068	-4%	-2%	0.19
81 Other Services	957	1,101	15%	718,009	744,589	4%	11%	0.72
92 Public Administration	6,008	5,664	-6%	2,423,848	2,268,292	-6%	1%	1.22
Total	28,918	29,014	0%	15,382,064	14,154,451	-8%	8%	1.00

Source: East Bay EDA HarrisInfo, CA State EDD QCEW

Notes: 2010 data for Richmond is from 1st quarter 2010

2010 data for California is from 3rd quarter 2009

While Richmond business have done relatively well during the recession, jobs in Richmond do not necessarily translate into employment for Richmond residents. Table 2 shows the location of origin for Richmond workers. Richmond residents make up a small and declining percentage of Richmond workers, only 14 percent by 2008.

Table 2: Origin of Richmond Workers 2002-08

	2002		2008	
	Count	Share	Count	Share
Richmond	4,432	16.6%	3,644	13.8%
Rest of Contra Costa	8,421	31.4%	7,411	28.2%
Alameda	4,838	18.1%	4,707	17.9%
Solano	2,352	8.8%	2,624	10.0%
San Francisco	1,100	4.1%	1,175	4.5%
Marin	976	3.6%	1,081	4.1%
Santa Clara	794	3.0%	854	3.2%
Sonoma	649	2.4%	756	2.9%
Sacramento	613	2.3%	697	2.6%
San Mateo	583	2.2%	638	2.4%
San Joaquin	365	1.4%	487	1.8%
All Other Locations	1,649	6.2%	2,276	8.6%
Total	26,772	100%	26,350	100%

Source: US Census LED On the Map, 2010.

Table 3 compares green sectors among cities in the East Bay Green Corridor using data and sector categories from the Center for Community Innovation from 2008. According to this source, within the East Bay, Richmond captures a notably high percentage of green manufacturing, green transportation and recycling and remediation jobs. Richmond lags in energy research and services, environmental services and green building.

Table 3: Green Jobs in East Bay Cities, 2008

	Energy Research	Env Srvcs	Green Building	Green Mfg	Green Transport	Recycling & Remediation	Emp Total	Business Total
Alameda	33	85	12	28	22	11	191	65
Albany		17	34	2	13	33	99	31
Berkeley	5,052	437	367	142	24	59	6,081	206
El Cerrito		20	1		5	18	44	33
Emeryville	1	365	15		1	15	397	36
Oakland	100	608	2,254	31	1,608	865	5,466	309
Richmond	17	124		81	520	589	1,356	69
San Leandro		48	27	91	247	580	993	89
Total	5,203	1,704	2,710	375	2,440	2,170	14,627	838
Richmond %	0%	7%	0%	22%	21%	27%	9%	8%

Source: Dun & Bradstreet, National Establishments Timeseries Dataset, 2008.

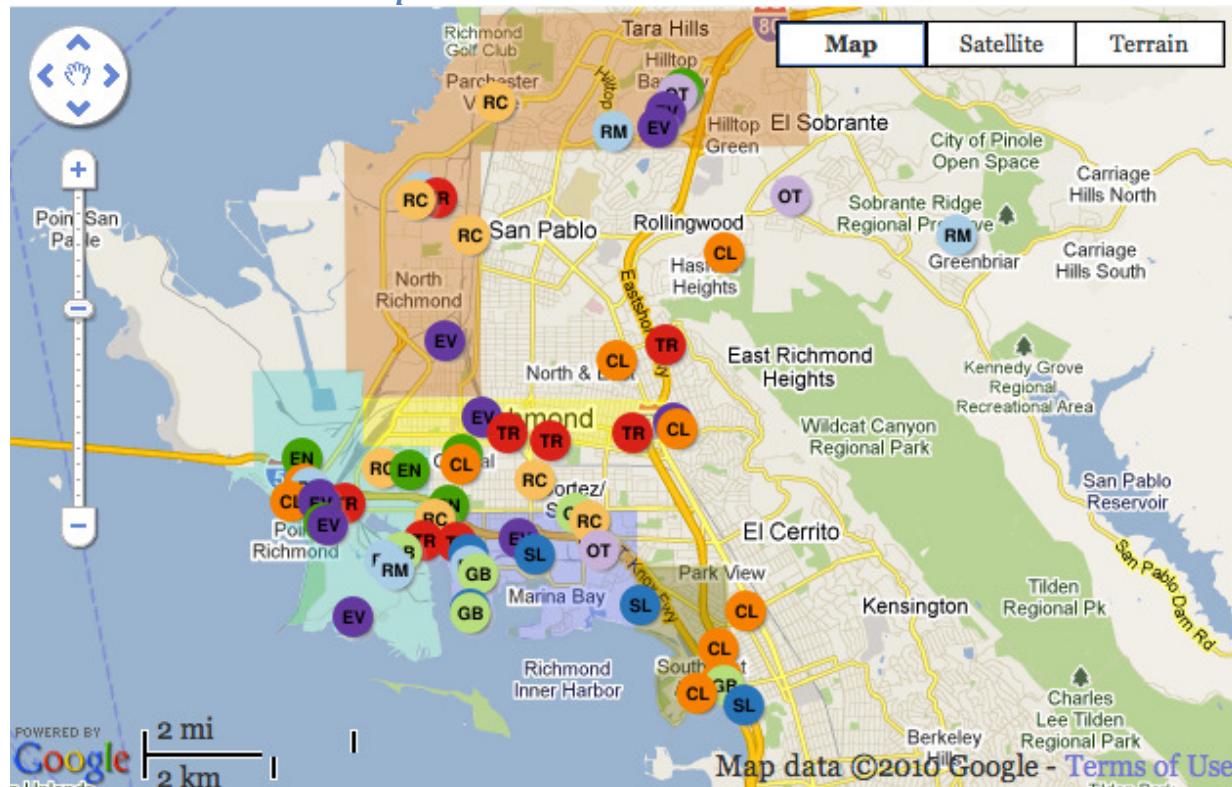
The City of Richmond's more in depth analysis of green employment in Richmond in 2010 shows a different distribution and higher overall employment figures. Richmond's analysis also uses slightly different categories finding 683 jobs in renewable energy (581 in solar), 418 in transportation services, 251 in recycling, 236 in environmental services and remediation, 220 in green building materials, construction and landscaping, and 29 in other green sectors for a total of 1,837 green jobs. These green employment figures should not be compared to the Center for Community Innovation figures for other cities in Table 3 because the methodology and timeframe are different.

Combined, these sectors (renewable energy, transportation services, recycling, environmental services and remediation, and green building materials, construction and landscaping) encompass this report's working definition of green business. While these categories are by no means meant to be exhaustive or definitive, they were chosen because they provide a useful framework for identifying green economic development opportunities given the existing local economy. Because this definition is based on particular sectors, not all of the businesses included as "green" have the most environmentally responsible operations. Furthermore, some of these green businesses, in addition to their green products and/or services, also produce very polluting products and services. Conversely, some Richmond businesses that work hard to green their operations are not considered green by this report because they do not produce green products and services.

In addition to classification by sector, Richmond green businesses can also be classified by type of work/building type. While not every job can be identified individually, using the primary building use and type of work performed for each business, 687 of Richmond's green jobs are in businesses that primarily conduct office work, 356 are in manufacturing space, 313 in

maintenance and repair, 225 in warehousing/logistics, 150 in research and development, 99 in remediation, and 7 in retail.

Richmond Green Business Map



Key:

- CL = Construction and Landscaping
- EV = Environmental Services
- GB = Green building materials
- RC = Recycling
- OT = Other

TR = Transportation Services
 SL = Solar Energy
 EN = Other Renewable Energy
 RM = Remediation

Source: richmondgreenbusiness.com

Chapter 2: Strengths, Weaknesses, Opportunities & Threats

In order to develop a green economic development strategy and implementation plan, this report begins by analyzing Richmond's strengths, weaknesses, opportunities and threats for green economic development. This analysis is based on interviews with Richmond businesses, a review of existing literature on the topic and economic and demographic data.

Strengths

Richmond has many green economic development strengths that lay the foundation for the current and future local green economy. These strengths include Richmond's diverse set of relatively affordable manufacturing, warehouse/distribution and office space, a key location between the East Bay, Marin, and the rest of the North Bay, state supported incentive zones, city

permitting expertise, goods movement infrastructure, local supply chains for green businesses and synergies with regional industries.

The Right Space at the Right Price

In discussing their decisions to locate in Richmond, more often than any other factor, green businesses cited the ability to find the right type of space, affordable space, and space to allow future opportunities for expansion. In all, 19 out of 26 interviewed businesses brought up this issue as a strength.

Type of Space

For many businesses, their location decision was mostly a matter of finding the right type of space. LSA Associates got pushed out of its offices in West Berkeley and needed a comparable office space. Another green business needed combined warehouse and office space of a certain size and quality. A third wanted quality office space. Bel Aire Displays needed a facility with a high electric load capacity. Alterra Energy Solutions is looking at building a biofuels facility in Richmond because the building type they need matches existing industrial uses. For SunPower and Vetrazzo the right space was a particular building, Richmond's Ford Building with its early industrial architecture and green building elements. These responses demonstrate the wide variety of space and building types in Richmond that cater to a diverse mix of green businesses.

Affordability of Space

Three other businesses focused on affordable rents. SunPrint, Geothermex and one other green business all noted affordable space as a major factor without specifying particular building type needs. At the same time, some businesses noted that rents in Richmond were actually more expensive than many areas of Hayward, Fremont or the far, outer North and East Bay. Silver Walker Studios came to Richmond despite the high rents because they could find the right kind of space. They eventually left for lower rents in Roseville before declaring bankruptcy. Brokers, in conversation with City staff, confirm that Richmond rents are not as affordable as many businesses expect, though rents are lower than the central East Bay and Marin.

Combination of Factors

A larger number of businesses emphasized both type of space and affordability, especially in reference to other parts of the East Bay. SunWater Solar found a nice new, small office space with a light industrial shop after struggling to find affordable light industrial space in Berkeley. One Richmond remediation business needed warehouse space close to a pier. They found a "good building, good space" in Richmond's Port. They also thought the price was "really good." A Richmond green transportation services business needed a large space and a good price. Another Richmond green business found a "vast expanse of land. There's not a lot of property of this size that accommodates light industrial uses." A Richmond recycled materials manufacturer needed more space and found their new Richmond facilities less expensive than their old location in Berkeley.

Potential for Expansion

Other businesses prioritized not only a large space, but the potential for future development and expansion. SunPrint liked its location because of the "space to grow." A Richmond green

landscaping company wanted the potential for cultivation next to their space. Heliodyne was looking into acquiring neighboring space for an office expansion.

Industrial/Manufacturing Space

Richmond green businesses made it clear that finding the right kind of space for the right price was very important to them. The following tables show market conditions in the fourth quarter of 2009 for different types of industrial space in Richmond and other cities in the inner East Bay. Table 4 provides data from BT Commercial on manufacturing lease space. 356 of Richmond's green jobs are in businesses that have a primary need for manufacturing space. Richmond has over 6 million square feet of manufacturing space on the lease market, about 7 percent of the region's space of this type. Just over one half million square feet are currently available for a 9 percent vacancy rate. This vacancy rate is higher than the East Bay average of 6.9 percent, but average rents in Richmond are also slightly higher at \$0.49 per square foot triple net as compared to the \$0.47 for the East Bay as a whole.

Table 4: Inner East Bay Manufacturing Lease Space, 2009

City	Building Base	Available Space			Vacancy Rate		Asking Rent (NNN)	
		Direct	Sublease	Total	Q4-09	Q4-08	Average	Range
Richmond	6,385,870	514,045	62,675	576,720	9.00%	7.40%	\$0.49	\$0.25-\$1.00
Berkeley	4,743,433	219,305	0	219,305	4.60%	1.90%	\$0.88	\$0.42-\$1.10
Emeryville	1,289,657	19,211	0	19,211	1.50%	1.70%	\$0.87	\$0.48-\$1.25
Oakland	24,644,566	1,418,696	96,200	1,514,896	6.10%	5.40%	\$0.36	\$0.20-\$1.00
San Leandro	13,204,330	922,936	48,610	971,546	7.40%	8.40%	\$0.42	\$0.16-\$0.70
Hayward	17,527,018	933,934	70,487	1,004,421	5.70%	4.00%	\$0.42	\$0.20-\$1.00
Union City	4,769,658	390,849	0	390,849	8.20%	3.80%	\$0.44	\$0.30-\$0.85
Newark	4,135,227	727,406	0	727,406	17.60%	15.30%	\$0.63	\$0.33-\$1.25
Fremont	9,522,625	479,302	15,500	494,802	5.20%	5.50%	\$0.62	\$0.23-\$1.00
Totals	86,222,384	5,625,684	293,472	5,919,156	6.90%	5.90%	\$0.47	\$0.16-\$1.25
Richmond %		7%	9%	21%	10%	130%	125%	104%

Source: NAI BT Commercial, East Bay I-80/880 Manufacturing Report, 4th Quarter, 2009.

Table 5 shows similar data for warehouse space. 225 of the city's green jobs are in businesses that primarily occupy warehouse and logistics space. Richmond again makes up 7 percent of the region's space of this type. The vacancy rate here is much higher, over 15 percent, compared to a regional average of just under 11 percent. Richmond's average rents match the regional average at \$0.40 per square foot triple net. Richmond has a much larger range of rents than most other cities in the region, from \$0.15 to \$0.90, indicating a variety of product types. The only other city with a similarly wide range is Oakland.

Table 5: Inner East Bay Warehousing Lease Space, 2009

City	Building Base	Available Space			Vacancy Rate		Asking Rent (NNN)	
		Direct	Sublease	Total	Q4-09	Q4-08	Average	Range
Richmond	5,556,167	861,681	0	861,681	15.50%	9.30%	\$0.40	\$0.15-\$0.90
Berkeley	1,827,031	12,250	0	12,250	0.70%	1.30%	\$0.83	\$0.83-\$0.83
Emeryville	1,249,271	70,971	46,528	117,499	9.40%	2.90%	\$0.51	\$0.43-\$0.58
Oakland	13,059,231	618,345	274,554	892,899	6.80%	5.30%	\$0.38	\$0.15-\$0.80
San Leandro	14,610,995	1,157,127	42,949	1,200,076	8.20%	5.80%	\$0.42	\$0.29-\$0.59
Hayward	19,225,962	1,894,738	914,379	2,809,117	14.60%	10.80%	\$0.39	\$0.13-\$0.60
Union City	8,110,034	1,391,868	42,935	1,434,803	17.70%	9.60%	\$0.38	\$0.13-\$0.60
Newark	4,186,608	295,552	132,048	427,600	10.20%	0.80%	\$0.33	\$0.25-\$0.42
Fremont	8,039,143	491,180	0	491,180	6.10%	5.60%	\$0.46	\$0.39-\$0.65
Totals	75,864,442	6,793,712	1,453,393	8,247,105	10.90%	7.20%	\$0.40	\$0.13-\$0.90
Richmond %		7%	13%	0%	10%	142%	129%	100%

Source: NAI BT Commercial, East Bay I-80/880 Warehousing Report, 4th Quarter, 2009.

Table 6 contains data similar to that from Tables 4 and 5, but from a different source, Colliers International. In addition to manufacturing and warehousing, Table 6 also has information about research and development (R&D) and flex space. The figures from Colliers vary considerably from BT Commercial. Colliers finds over a million fewer square feet for both manufacturing space and warehousing space. The rents that Colliers observes are also significantly lower, \$0.39 for manufacturing and \$0.34 for warehousing. Additionally, whereas BT finds that Richmond rents are essentially at the corridor average, Colliers finds them significantly below that average. The vacancy rates are the most radically different. For manufacturing, Colliers finds a far higher 15.7 percent vacancy rate. For warehousing it finds a far lower 4.5 percent vacancy rate. Again, whereas BT observes vacancy rates in Richmond that are higher than the corridor average, Colliers sees a split with industrial/manufacturing vacancy rates well above average, but warehouse rates far below. Some of these discrepancies should be accounted for simply by each firm's access to different original data sources. The different references to the corridor average can also be explained by a different mix of cities included in that corridor. Some of the differences may also be explained by Colliers inclusion of a separate R&D/flex space category that in some cases may include space that was categorized by BT under manufacturing or warehousing.

For R&D/flex space, Table 6 shows about 3.5 million square feet with a vacancy rate of 9.6 percent, renting for an average of \$0.89 per square foot triple net. Unlike its findings for industrial and warehouse space, R&D/flex space rents in Richmond are above the corridor average and vacancies below the average. Richmond also makes up a very high percentage, 35 percent, of this type of space, though this may be in part due to the exclusion of cities like Emeryville and Berkeley from the dataset. 150 of Richmond's green jobs are in businesses that mainly use R&D space.

Table 6: East Bay Industrial Lease Space, 2009

Submarket	Existing Properties		Total Vacancy			Average Rent (NNN)
	Bldgs	Total Inventory SF	SF	Rate Q4	Rate Q3	
Richmond						
Industrial	226	5,094,106	801,331	15.70%	16.90%	\$0.39
Warehouse	41	4,263,981	193,953	4.50%	4.90%	\$0.34
R&D/Flex	101	3,436,753	329,036	9.60%	9.80%	\$0.89
Total	368	12,794,840	1,324,320	10.40%	11.00%	\$0.51
Oakland						
Industrial	834	22,664,359	1,133,836	5.00%	5.50%	\$0.41
Warehouse	156	10,616,104	1,276,985	12.00%	13.20%	\$0.37
R&D/Flex	0	N/A	N/A	N/A	N/A	N/A
Total	990	33,280,463	2,410,821	7.20%	8.00%	\$0.39
San Leandro						
Industrial	460	11,661,810	913,734	7.80%	9.50%	\$0.42
Warehouse	127	14,543,408	684,627	4.70%	5.20%	\$0.37
R&D/Flex	52	847,380	42,809	5.10%	9.60%	\$0.79
Total	639	27,052,598	1,641,170	6.10%	7.20%	\$0.41
Hayward						
Industrial	784	16,504,507	1,070,275	6.50%	7.70%	\$0.50
Warehouse	214	21,078,545	2,834,993	13.40%	14.20%	\$0.38
R&D/Flex	107	4,579,872	686,403	15.00%	16.10%	\$0.68
Total	1,105	42,162,924	4,591,671	10.90%	11.90%	\$0.45
Union City						
Industrial	162	7,883,678	499,739	6.30%	6.40%	\$0.50
Warehouse	80	7,187,526	509,545	7.10%	8.40%	\$0.40
R&D/Flex	14	870,672	61,972	7.10%	7.10%	\$0.96
Total	256	15,941,876	1,071,256	6.70%	7.30%	\$0.48
Market Total						
Industrial	2,466	63,808,460	4,418,915	6.90%	7.80%	\$0.50
Warehouse	618	57,689,564	5,500,103	9.50%	10.30%	\$0.38
R&D/Flex	274	9,734,677	1,120,220	11.50%	12.50%	\$0.76
Total	3,358	131,232,701	11,039,238	8.40%	9.30%	\$0.44
Richmond %						
Industrial	9%	8%	18%	228%	217%	78%
Warehouse	7%	7%	4%	47%	48%	89%
R&D/Flex	37%	35%	29%	83%	78%	117%
Total	11%	10%	12%	124%	118%	116%

Source: Collier International, Oakland, CA, Fourth Quarter, 2009, Industrial Overview.

Commercial Space

Commercial space is the type of space most demanded by the Richmond green economy, in employment terms. 687 of Richmond's green jobs are in businesses that primarily need office space. Additionally, almost all industrial green businesses need some office space. In general, Richmond green businesses are looking for class B or C office space in smaller, older buildings. One green sector that is very strong in Contra Costa County, though not as much in Richmond, is environmental consulting. Environmental consulting businesses primarily need office space. Table 7 returns to data from BT Commercial showing office space on the lease market in the

inner East Bay. Richmond makes up about 8 percent of total space and 14 percent of available space. The Richmond vacancy rate for the end of 2009 sat at an incredibly high 30 percent. While vacancy rates in the region are also high, this rate is worse than the peripheral market average of 27.4 percent and far worse than the overall average of 18 percent. Only North Alameda has a higher vacancy rate. The average asking rent, in contrast, is high, at \$2.26 per square foot, full service. This rental rate is higher than even the core market average of \$2.23. Only Berkeley and Lake Merritt have higher average rents. These two factors will likely begin to balance each other out. Asking rents should begin to fall until the vacancy rate returns to a more healthy level. Overall, Richmond's office market appears to be one of the strongest of the East Bay periphery, but still lacking the demand of the core East Bay markets.

Table 7: East Bay Office Lease Space, 2009

City	Building Base	Available Space			Vacancy Rate		Asking Rent (FS)	
		Direct	Sublease	Total	Q4-09	Q4-08	Average	Range
Richmond*	2,438,601	718,378	16,423	734,801	30.10%	27.40%	\$2.26	\$1.65-\$2.75
West Berkeley	1,317,433	204,039	2,270	206,309	15.70%	10.90%	\$1.99	\$1.35-\$3.00
Berkeley	2,019,227	228,129	2,603	230,732	11.40%	13.60%	\$2.33	\$1.35-\$3.25
Emeryville	4,007,382	533,088	139,147	672,235	16.80%	13.60%	\$2.12	\$1.15-\$3.00
City Center-Oakland CBD	5,252,125	617,399	127,503	744,902	14.20%	13.90%	\$2.20	\$1.25-\$3.00
Lake Merritt-Oakland CBD	7,011,059	941,302	13,606	954,908	13.60%	12.80%	\$2.41	\$1.00-\$3.00
Jack London Square	1,508,415	249,380	17,614	266,994	17.70%	12.50%	\$2.11	\$1.15-\$3.00
Oakland Coliseum-Airport*	2,156,290	460,207	42,770	502,977	23.30%	20.90%	\$1.57	\$1.10-\$2.00
N Alameda*	1,664,902	484,688	70,286	554,974	33.30%	31.70%	\$2.04	\$1.00-\$2.50
S Alameda*	1,956,667	331,814	123,074	454,888	23.20%	18.40%	\$2.00	\$1.35-\$2.50
PERIPHERY*	8,216,460	1,995,087	252,553	2,247,640	27.40%	24.40%	\$2.00	\$0.95-\$2.75
CORE	21,115,641	2,773,337	302,743	3,076,080	14.60%	13.20%	\$2.23	\$1.00-\$3.50
TOTALS	29,332,101	4,768,424	555,296	5,323,720	18.10%	16.30%	\$2.14	\$1.00-\$4.00
Richmond %		8%	15%	3%	14%	166%	168%	106%

Source: NAI BT Commercial, East Bay I-80/880 Office Report, 4th Quarter, 2009.

Table 8 moves beyond general market reports to show specific industrial spaces for lease in Richmond as of January, 2010. The Table reinforces the idea of Richmond as a city with a wide variety of industrial space and a correspondingly broad range of rents.

Table 8: Richmond Properties for Lease, January, 2010

Name & Address	Available Space	Occ. Rate	Monthly Lease/sf	Rent Type	Comments
3002 Giant Rd Unit 3070	19,421		\$0.25	Gross	
Unit 3034	5,633		\$0.35	Gross	
Unit 3030	3,900		\$0.35	Gross	
Unit 208	2,541		\$0.40	Gross	
Unit 1007	2,443		\$0.40	Gross	
4118 Lakeside Dr	9,590		\$0.59	IG	
1009 Factory St	2,801		\$0.65	IG	
3701 Collins Ave Unit 1A&B	2,000		\$1.15	IG	
Unit 8A	1,600		\$1.25	IG	
Britannia Bus Center A 3023-3035 Research Dr	51,648	0%	\$0.68	NNN	R&D Flex Former Onyx Pharmaceutical
Harbour Business Center 880 Harbour Way South	57,800	0%	\$0.85	NNN	R&D Flex near port
Harbor Business Center Building 2 870 Harbour Way South	32,450	50%	\$0.85	NNN	R&D Flex near port
300 Cutting Blvd	12,552		\$0.09	NNN	Light Ind, Land duplicate
Pinole Point Business Park 2100 Atlas Rd Bldg 3	53,830		\$0.49	NNN	Light Ind
Pinole Point Business Park Phase II 1 Giant Rd Building 1	249,896	0%	Neg	Neg	New Business Park Under construction?
Building 2	224,154				
Building 3	41,365				
Building 4	126,028				
Pullman Site 350 Carlson Blvd Building B	27,000	74%	\$0.28	NNN	Ind
Harbour Business Center 860 Harbour Way S Bldg 1	32,641	0%	\$0.90	NNN	R&D the rest of space is empty office pv solar roof
Allied Box 1015 Chesley Ave	48,000	56%	\$0.42	IG	Ind rail spur access
Guarantee Glass 2200 Central Ave	17,450	65%	\$0.29	IG	Ind

2700 Rydin Rd		38%			
A	4,532		\$0.85	IG	Ind
B	7,922		\$0.75	IG	Ind
C	6,144		\$0.75	IG	Ind
D	8,114		\$0.75	IG	Ind
3427 Regatta Blvd Bldg G	21,363	0%	\$0.60	NNN	Warehouse
Colorstrip 1 Barret Ave	105,516	0%	\$0.25	NNN	Ind 4,929 sf office, 6 acres parcel On market since 2000
Marina Center 1275 Hall Ave		63%			bridge cranes, 7 grade level doors
B	8,454		\$0.70	NNN	R&D - 1 grade door, 16' ceiling
C	10,534		\$0.70	NNN	R&D
D	13,916		\$0.70	NNN	R&D
Noll Mfg 1900 7th St A	29,376		\$0.25	Gross	Warehouse 5 dock doors, 16'-20' ceiling
Palacek 2512-2514 Florida Ave	45,191		\$0.35	Gross	Warehouse - 12,100 sf office Also for sale for \$2,250,000
AAA 2801 Giant Rd Building H	20,000		\$0.45	IG	Ind Bridge Cranes PLUS Jibs, Underhook
Bay Aggregate 300 Cutting Blvd			\$0.09	NNN	4.05 Acres Also for sale for \$4,000,000 Land, at the port
Myers Drum 900 Brookside Dr	5,500		\$0.50	Gross	Ind also 3 acres of land for lease next door
1000 13th St	5,300				Sale price \$785K but also for lease Live/Work Flex
1014 Chesley Ave					11.84 acres ind land
3151 Regatta Blvd	99,123	87%	\$0.27	NNN	27.35 Acres forklift ramp, rail service, covered loading dock
830 Marina Way S	242,720	0%	\$0.20	NNN	Rail Service Potential above Ford Peninsula by Freeway

Source: NAI BT Commercial, Cushman & Wakefield, Colliers, Cornish & Carey, Lee & Associates, 2010.

Bridging the East and North Bay

The draw of industrial and commercial space is largely affected by its location within the region and the infrastructure that supports it. Richmond sits between the inner East Bay, Marin and the outer Contra Costa/Napa/Solano sub-regions of the Bay Area. Businesses that need ready access to two or more of these regions have an incentive to locate in Richmond. As noted in the last section, while Richmond is not the most affordable place in the Bay Area, it is considerably more

affordable than the inner East Bay. It is also much more affordable than Marin. While businesses that need access to multiple adjacent regions had the strongest incentive to locate in Richmond, businesses that simply wanted access to Marin or the inner East Bay also came to Richmond for affordable space. Richmond green businesses most often mentioned the need to be close to the skilled workforce, the customer base and the centers of innovation that the East Bay and North Bay provide. Richmond also benefits from being part of a regional collaboration for green economic development, the East Bay Green Corridor Partnership.

Many Richmond green businesses in discussing their location decisions brought up the importance of access to the skilled workforce of both the East Bay and North Bay even if many of those workers did not live in Richmond. Geothermex needed a place that was accessible to its East Bay staff and on the way to the North Bay geothermal field, the Geysers. SunWater Solar did not want to move too far from Berkeley where they were originally located because their staff still mostly lived there. LSA Associates chose their location because it was accessible for their employees coming from the East Bay, Marin and San Francisco. Another green business noted that they liked the Richmond location because it is centrally located for their workforce. SunPrint likes Richmond because the affordability of housing and local quality of life, especially in Point Richmond, have made it easy to recruit new staff to move to Richmond.

Richmond also benefits from proximity to centers of green innovation. Four Richmond green businesses, SunPrint, SunPower, Heliodyne and Vetrazzo (which was recently bought and will soon move to Georgia), have come out of local research and innovation. For example, SunPrint combines research from Stanford, Xerox Parc and Lawrence Berkeley Labs. They received access to work at the Labs as a startup, moving to Richmond with their mostly East Bay staff when they were ready to expand.

Just as businesses mention the importance of a green workforce and innovation centers, they also mention the importance of green customers and green policies in the East and North Bay. SunWater Solar likes being close to Marin where many of the company's installation jobs are located. LSA associates attributed the demand for their services to the green and preservationist sentiments in the Bay Area, and especially the East Bay, that helped initiate much of the state legislation and local policies that drive their work. One Richmond green transportation services company relies on local businesses willing to pay more for green shipping. SunPower, Heliodyne and many other firms brought up their desire to be in the Bay Area, in the center of their major US market.

The benefit of Richmond's location between the East Bay and North Bay relies on the regional assets of those areas. The following analysis looks at those regional strengths, especially of the East Bay, with regards to universities, research institutions, innovation, a skilled workforce, green consumer demand, and regional collaboration.

Universities, Research Institutions, Innovation and Workforce

The Bay Area is home to world class universities and research institutions. The University of California at Berkeley, Lawrence Berkeley Labs, Lawrence Livermore Labs, Stanford and the University of California at San Francisco are only some of the most well known. These institutions help produce many of the region's most skilled workers and innovative local startups.

Richmond's principal link to these institutions is the UC Berkeley Field Station. Located on the Southern Waterfront, the Field Station occupies 80 acres and employs 300 people with a regular shuttle to the main UC Berkeley campus. Personal rapid transit startup Cybertran is considering locating in the Marina Bay neighborhood in part to be near the Field Station.

The Bay Area's universities, research institutions and educated workforce combine with venture capital access and a culture of entrepreneurship to support innovation. Table 9 shows patents and cleantech patents for the Bay Area broken down into three sub-regions. Between 2000 and 2008, the Bay Area captured 64 percent of California's patent awards with the highest concentration in Silicon Valley. While for cleantech this figure falls to 51 percent, the region still clearly dominates. Notably for Richmond, although the East Bay wins fewer cleantech patents than Silicon Valley, it, unlike the Valley, does better in cleantech than in patents overall. San Francisco falls behind the other sub-regions in both cases, but with still respectable numbers.

Table 9: Patents, 2000-08

MSA Name	All Patents		Cleantech Patents	
	Number	% of State	Number	% of State
Silicon Valley	87,755	48%	110	29%
East Bay	18,348	10%	53	14%
San Francisco	11,433	6%	34	9%
Bay Area	117,536	64%	197	51%

Source: Innovating the Green Economy Report, 2009.

Note: Silicon Valley includes Santa Clara and San Benito Counties

East Bay includes Alameda and Contra Costa Counties

San Francisco includes San Francisco, San Mateo and Marin Counties

Table 10 tells a similarly story with venture capital. The Bay Area captures 73 percent of all of California's venture capital and 63 percent of cleantech venture capital. Silicon Valley again is the dominate force in both cases. However, with all venture capital, San Francisco also acquires a very high 27 percent. The East Bay, while lower for all venture capital, again increases its percentage for cleantech, rising to meet San Francisco at 16 percent.

Table 10: Venture Capital, 2000-08

MSA Name	All Venture Capital		Cleantech Venture Capital	
	In Millions	% of State	In Millions	% of State
Silicon Valley	55,834	36%	827	31%
East Bay	15,580	10%	441	16%
San Francisco	41,779	27%	433	16%
Bay Area	113,194	73%	1,700	63%

Source: Innovating the Green Economy Report, 2009.

Note: Silicon Valley includes Santa Clara and San Benito Counties

East Bay includes Alameda and Contra Costa Counties

San Francisco includes San Francisco, San Mateo and Marin Counties

The Bay Area's universities and high quality of life help to attract and sustain some of the most educated workforce in the world. As Table 11 indicates, Bay Area educational attainment is much higher than in the nation overall. Those with bachelor, graduate and professional degrees make up 42 percent of the Bay Area population over 25 years old as compared to only 27 percent in the US. Richmond does not benefit from this high educational attainment. The percent with advanced degrees, 27, resembles the US average rather than Bay Area. Additionally, Richmond has much higher concentrations in the lower education levels. Twenty percent of Richmond residents never completed high school, while in the Bay Area the figure is only 14 percent and in the nation it is only 15 percent.

Table 11: Education Attainment, 2008

	Richmond	Bay Area	United States
Less than 9th grade	12%	8%	6%
9th to 12th grade, no diploma	8%	6%	9%
High school graduate	22%	18%	30%
Some college, no degree	24%	20%	20%
Associate's degree	7%	7%	7%
Bachelor's degree	17%	25%	17%
Graduate or professional degree	10%	17%	10%

Source: American Community Survey, US Census, 2008.

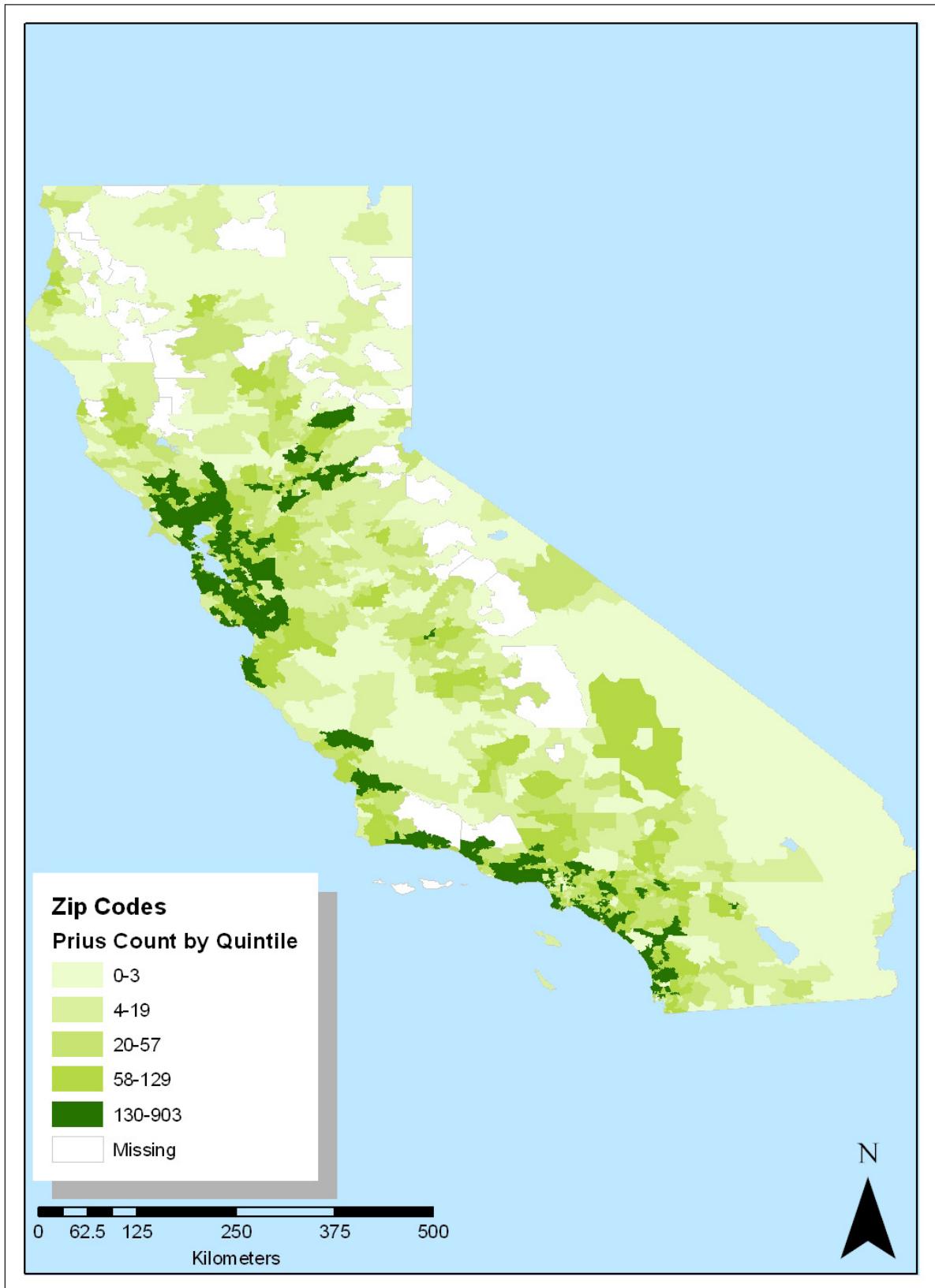
Note: Bay Area includes San Jose-San Francisco-Oakland CSA

Margin of error not included

Green Consumers

The Bay Area has a long history of environmentalism, which continues today. This history results in environmentally minded consumers who pay a premium for local green products and it has helped pass large numbers of local green policies in many cities across the region. Together, these consumers and local policies can help make the Bay Area a first adopter for many aspects of the green economy.

Matthew Kahn in his recent paper, “Geography of Green Consumerism,” assesses demand for green products by zip code. His map (below) displays electric hybrid car ownership in California. The darker the green color, the higher the concentration of ownership. The Bay Area, in dark green, has the most significant concentration of these vehicle owners. Kahn also sites a similar Bay Area concentration of LEED certified buildings.



Note: Share of total Vehicles (Cars and Trucks)

Source: R.L. Polk

Solar installations are another measure of green consumer demand. California is the US leader in solar installation. The California Solar Rebate Initiative provides rebates to residential and commercial solar installations in areas served by private utilities. By tracking these rebates California Solar Statistics provides rough estimates of megawatts (MW) installed by county. Despite its foggy climate, since 2007 when the rebates began, the Bay Area has installed at least 120 MW or 25 percent of statewide installed capacity. This figure does not even include San Francisco or Marin Counties. Richmond's Contra Costa County ranked 8th with 18.3 MW of capacity installed. This local demand is critical in supporting not just local solar installation companies, but also local manufacturers.

Table 12: Solar Installation Rebates Granted in CA and the Bay Area, 2007-10

County	Capacity (MW)	Incentive (\$)
San Diego	62.3	136,105,635
Los Angeles	48.5	110,304,715
<i>Santa Clara</i>	44	91,069,669
Riverside	28.9	68,922,263
San Bernardino	25.6	63,413,070
Orange	25	56,570,184
<i>Alameda</i>	19.7	39,042,748
<i>Contra Costa</i>	18.3	35,564,111
Fresno	18	36,672,895
<i>Sonoma</i>	16.9	30,526,521
<i>San Mateo</i>	11	21,111,755
<i>Napa</i>	10.7	19,246,473
Kern	13.7	29,159,462
Yolo	8.7	16,385,549
Ventura	11.2	25,157,442
Tulare	6.5	14,490,784
Santa Barbara	3.2	6,941,188
Inyo	1.3	4,250,540
Other/Unspecified	100.7	194,636,554
Bay Area	120.6	236,561,277
Bay Area %	25%	24%
CA Total	474.2	999,571,558

Source: <http://www.californiasolarstatistics.ca.gov/reports/3-17-2010/CountyStats.html>

Note: Other/Unspecified includes some Bay Area counties.
Data on installations in public utility jurisdictions not included.

Additional data is provided by the 2009 Bay Area Solar Installations (BASI) Report. The report found that "In 2009, California installed 95.7 megawatts of solar with about 52.7 megawatts in the Bay Area, representing 55 % of the state's total." While total watts installed declined slightly at the state level, in the Bay Area watts installed grew by 70% over 2008. The BASI Report also

ranked the top installers for 2009. Richmond won the most watts installed per capita, 34.77. Richmond also placed second in the Bay Area in total Watts (behind San Jose), beating out much larger cities such as San Francisco and Oakland. The Bay Area is playing a growing role in demand for solar power with Richmond as a center of that growth in demand.

East Bay Green Corridor Partnership

These regional strengths are magnified through collaboration. Richmond is a founding member of the East Bay Green Corridor Partnership (EBGCP). The EBGCP today includes, in addition to Richmond, 7 other East Bay cities - Albany, El Cerrito, Berkeley, Emeryville, Oakland, Alameda and San Leandro – UC Berkeley, Lawrence Berkeley Labs, the Peralta and Contra Costa Community College Districts and Cal State East Bay. The mission of the EBGCP is “to create a thriving region of green technology innovation, commercialization and economic development that generates high quality jobs and meets environmental and social goals.” This Partnership creates a well publicized brand that Richmond can be a part of and offers the benefits of regional coordination that can support local business development and green policy efforts.

Support and Incentives for Green Businesses in Richmond

Green businesses locate in Richmond to take advantage of fast permitting and a variety of state incentive zones.

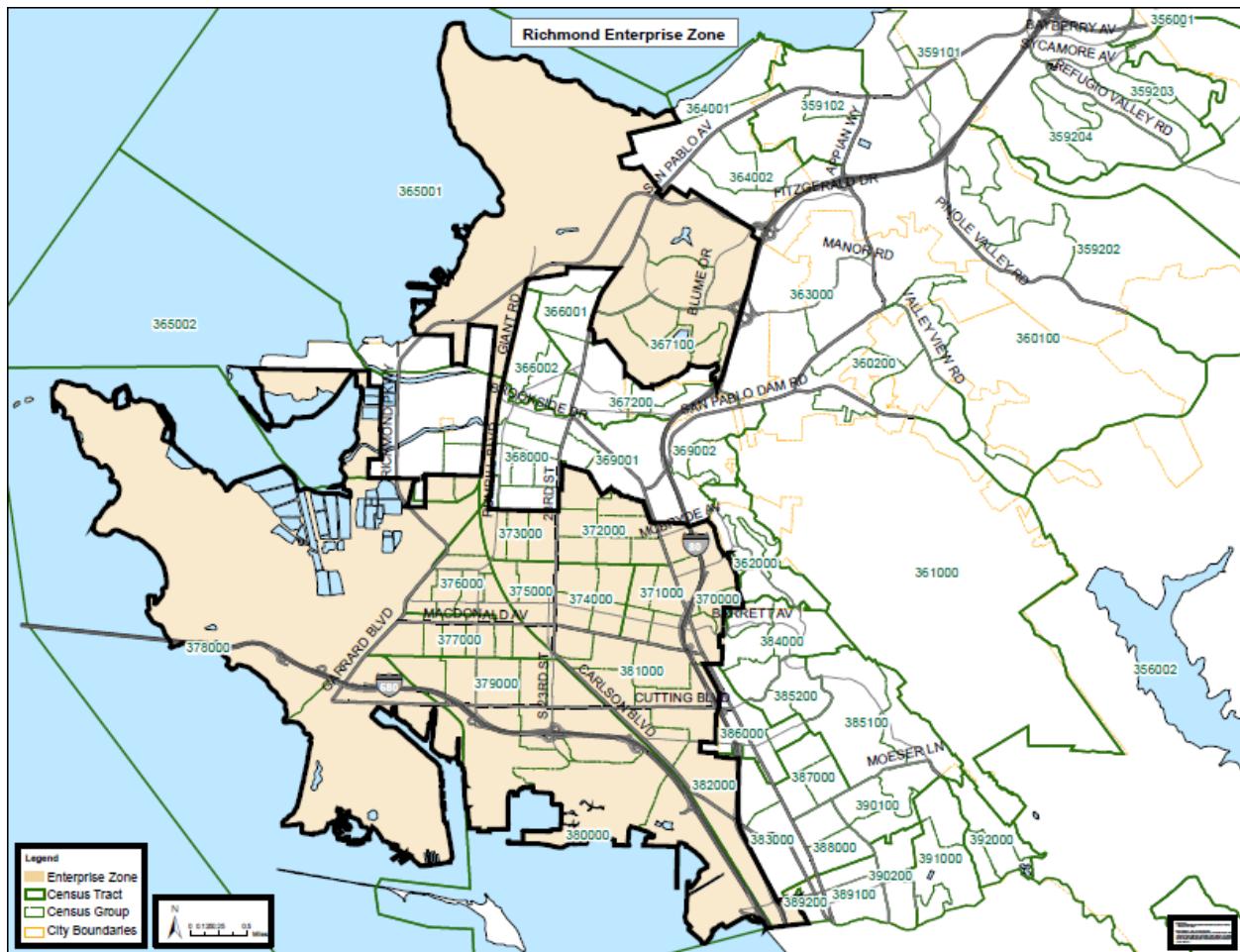
Permitting

Speed and ease of permitting can translate into real savings for businesses. Richmond’s ability to make permitting easier for new and expanding businesses has become a major economic asset for the city. Four Richmond green businesses, SunPrint, National Gypsum, and two other green businesses commended Richmond’s speedy permitting process. SunPrint in particular noted that they received in 2 months permits that would have taken 9 months in Silicon Valley. SunPrint has passed on its positive experience in Richmond to its Venture Capital funders. A carbon sequestration startup with the same VC investors is currently considering locating in Richmond in part because of the positive comments they have heard from SunPrint about permitting.

Enterprise Zone and Targeted Employment Area

In 2009, Richmond received re-designation from the State of California for its Enterprise Zone (EZ) and Targeted Employment Area (TEA), retroactive to March 2, 2007. The EZ and TEA tax incentives are designed to spur investment, business, and job growth in disadvantaged communities. The City focuses these resources on business attraction and retention by helping new and existing companies in Richmond qualify for EZ and TEA state tax credits. For the EZ, the tax reduction is based on where the business operates; for the TEA, the tax reduction is based on where the employee resides. One of the most popular EZ and TEA incentives is the Hiring Tax Credit, which is managed through the City’s employment and training department. Each credit can be worth up to \$35,000 per hire over a five year period. For January through August of 2009, Richmond businesses received hiring tax credits for 521 employees. Other EZ tax incentives cover machinery and other qualified expenses, allow businesses to carry forward operating losses to reduce tax liability, and provide several other tax incentives. As shown in the map below, the Richmond Enterprise Zone encompasses nearly all of Richmond except for Eastern El Sobrante Valley.

Three Richmond green businesses, Heliodyne, Vetrazzo and National Gypsum mentioned using employee tax credits through the EZ and TEA. Other businesses suggested that they would start using the program once their entry level workforce expanded. SunPower, when they opened their new manufacturing facility in Milpitas, conveyed that they consider an EZ as a factor in making location decisions for their California manufacturing facilities. Milpitas was forced to offer SunPower a \$1.5 million low-interest loan to counter the attractiveness of San Jose's EZ. Bel Aire Displays, a printer that takes some environmental sustainability steps in their building and operations, used EZ tax credits for purchasing new equipment when they moved to Richmond.

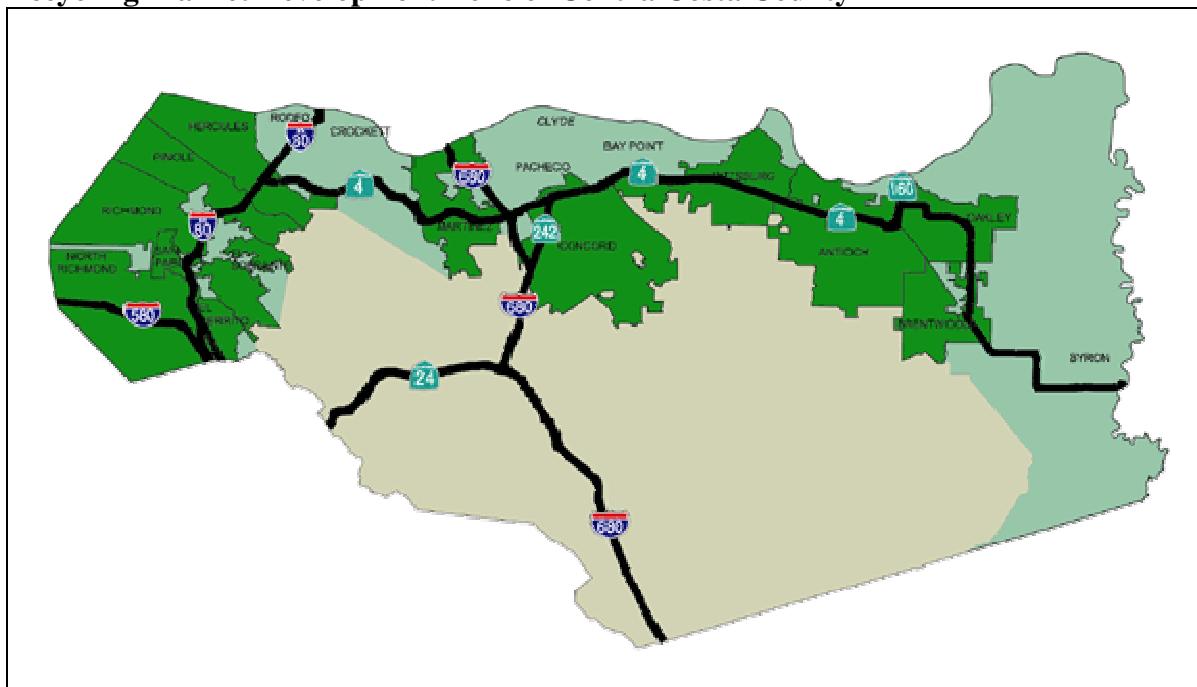


Recycling Market Development Zone

Richmond encompasses a large portion of the Contra Costa County Recycling Market Development Zone (RMDZ). The California RMDZ program provides low interest loans, technical assistance and marketing benefits for manufacturers that add value to materials diverted from landfills. Like Richmond's Enterprise Zone, the RMDZ is targeted at economically distressed regions, but unlike the EZ, it is a specifically green program. Participating firms have created around 9,000 jobs in the state since 1990 and the State recently moved to expand the program in order to boost the green economy. The RMDZ covers the dark green (incorporated

cities) and light green (unincorporated county) areas along the shoreline of Contra Costa County. At least one Richmond recycled materials manufacturer received low interest loans from the RMDZ, which was an important factor in originally locating in Richmond.

Recycling Market Development Zone of Contra Costa County



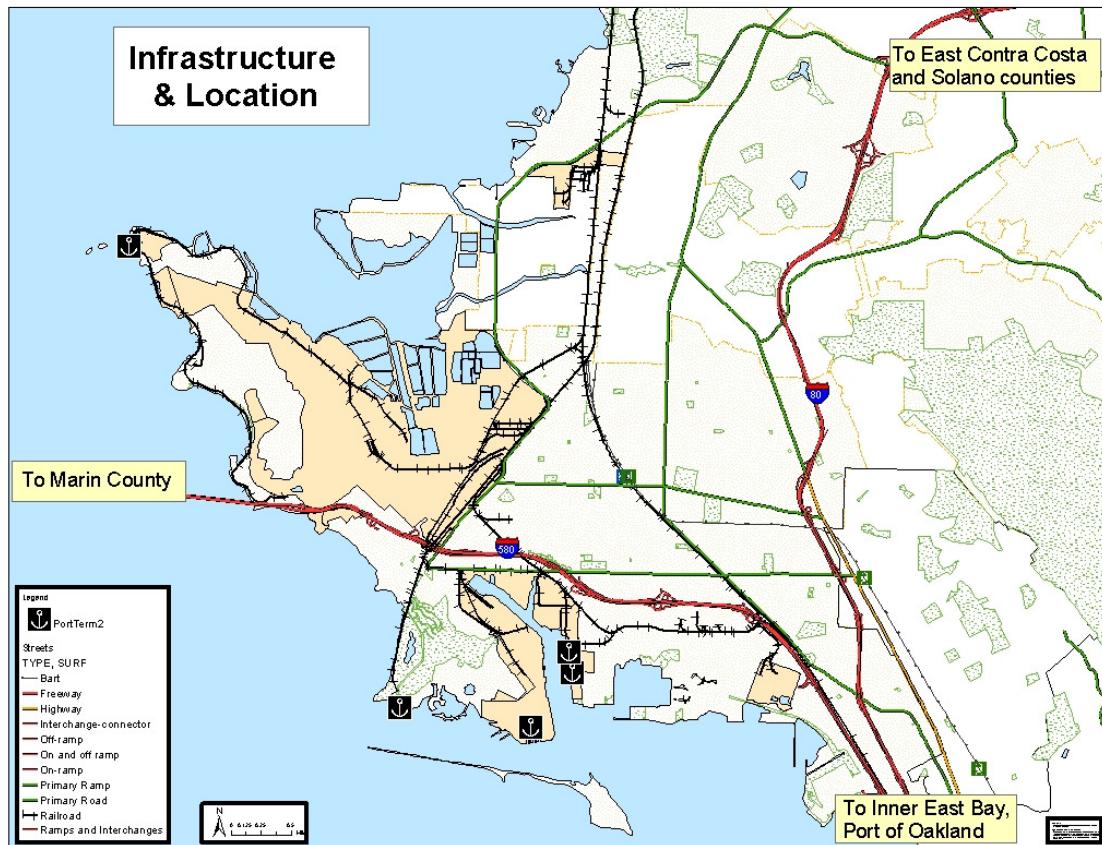
Goods Movement: Port, Rail and Highway

Not only does Richmond have a wide variety of industrial and commercial space at reasonable rents, not only is Richmond located in a key intersection for the North and East Bay, it also has important port, rail and highway infrastructure that adds value to local industrial property and facilitates goods movement to the rest of the Bay Area and beyond.

Eight businesses discussed the importance of port and rail access in Richmond. National Gypsum and materials company Eagle Rock Aggregates (which is not in an identified green sector, but uses innovative environmentally sustainable processes), are located at the port and have their own docks. The Richmond Pacific Railroad serves these businesses and other port businesses with rail that reduces their carbon footprint and diesel emission relative to truck shipping. Richmond solar thermal manufacturer, Heliodyne, does not use rail or port access in Richmond, but does rely on Richmond's proximity to the Port of Oakland. Lastly, Rhode Island biofuels company Alterra Energy Solutions mentioned the importance of rail and port access in considering a new facility in Richmond.

The Port of Richmond includes seven city-owned terminals and eleven privately owned terminals and dry docks that receive a variety of bulk materials and autos. Access to bulk materials, (for example: bio-waste, silicon, recycled glass) and the ability to export finished products are major benefits for the green businesses that rely on port access. In addition, the port directly employs workers and generates city revenue at its municipal terminals.

Rail and highway infrastructure provides access to the region and the entire inland US. Many industrial parcels in Richmond have potential rail yard access. Highways not only provide inland access to send and receive goods, but also provide swift connections to other parts of the Bay Area for goods and for commuting employees. Lastly, Richmond's BART/Amtrak transit station is a key asset for green workers hoping to commute to work without a car. Many individual employers provide employee and customer shuttles from BART to their facilities.



Supply Chains and Synergies

In interviews, many Richmond green businesses explained how certain existing green and conventional industries in Richmond influenced their location decisions. Both solar firm SunPower and green building materials manufacturer Vetrazzo emphasized Richmond's history as a center of Bay Area manufacturing as a major factor in their location decisions. Alterra Energy Solutions, a biofuels firm looking to locate in Richmond next year, mentioned the benefits of being near Chevron and the larger petroleum industry in Richmond. Solar firms SunPower and SunPrint both rely on proximity to the Silicon Valley semiconductor industry for a skilled workforce and suppliers. Heliodyne benefits from the new Pacific Energy Testing lab in Silicon Valley that certifies solar thermal equipment to qualify for federal and state incentives. Richmond green businesses also have very specific supply chain relationships with each other. Richmond biofuels company, LC Biofuels, provides fuel for, local green transportation services

firm, Blue Sky Shipping, which transports Vetrazzo materials. SunWater Solar installs Heliodyne solar thermal equipment and was recruited to Richmond in part by Heliodyne.

Bay Area Conventional Industry Strengths Support Green Sectors

Table 13 breaks out four conventional industry strengths from within the Bay Area economy that have the potential to support growth of particular green sectors. These strengths are groupings of related sectors including biotechnology (biotech), semiconductors/information technology manufacturing (IT Mfg), information technology services (IT Services) and Oil and Coal. The employment concentrations for these groupings are compared with the remaining Bay Area employment (Other). The table gives total employment, the location quotient (LQ), the growth rate and the differential shift (DS) for each category. The LQ shows the concentration of employment and the DS shows regional growth relative to growth in the same sectors at the national level.

Of the groupings in the table, IT Mfg and IT services employ the most residents in the Bay Area. Biotech falls in the middle, while Oil and Coal employs the fewest with barely over seven thousand workers. The most concentrated grouping in the Bay Area is IT manufacturing, with an LQ of 5.39. The others all sport LQ's of about half that level. Growth in IT manufacturing, however, was fairly anemic from 1996 to 2006, at only two percent, while the DS was starkly negative, by 28 percent. Growth for biotech was negative and the DS negative as well. By contrast, IT services and oil and coal grew vigorously over the same period. IT services boasted a positive DS of 73 percent.

The high location quotients for these groupings indicate an expertise in these areas that can be beneficial to related industries. At the same time, the declining growth rates should cause local suppliers in these areas to seek new customers. For IT Mfg, this scenario can be seen in the supply chain comments of SunPower and SunPrint mentioned above and is communicated even more strongly in recent business surveys and studies of Silicon Valley itself. The large semiconductors/IT Mfg sector is increasingly providing its expert workforce and suppliers to the emerging solar industry. These labor and material inputs are all the more available because of stagnating employment in the IT Mfg sector. The comments from Alterra Energy Solutions show a similar dynamic between biofuels and the oil industry. The Bay Area oil industry is much smaller than the IT Mfg sector, but also much more concentrated in Richmond and Contra Costa County. While the regional Oil and Coal industry is still growing rapidly, implementation of AB 32 and other new California environmental policies are expected to reduce growth in the sector and provide an impetus for the petroleum industry to diversify into less carbon intensive (bio)fuels.

The connections, articulated in business interviews, between the Bay Area's IT Mfg and Oil and Coal industries on the one hand and the emerging green economy on the other draw attention to the lack of comments by Richmond biofuels companies about the Bay Area Biotech industry. This lack of discussion is likely due to the type of biofuels companies in Richmond interviewed for this study. These businesses are not engaged in research and development and rely on existing first generation biofuels technology. Most studies of second and third generation biofuels industry development emphasize the importance of a biotech cluster and proximity to life sciences research. Amyris Biotechnology, the largest biofuels company in the East Bay

exemplifies this connection, locating in Emeryville with that city's biotech cluster and in the same building as the Joint BioEnergy Institute (JBEI). It is unclear at this point whether such biofuels research and development businesses will eventually develop interest in Richmond or whether they will choose to remain in Emeryville, San Francisco's Mission Bay and other neighborhoods with high concentrations of biotech firms.

IT Services is most relevant for green sectors related to a smart electric grid and information technology for alternative transportation, especially parking. Because smart grid and IT parking businesses are not present in Richmond, IT Services is not addressed in this report.

Table 13: Bay Area Industry Groupings, 2006

	Emp 2006	LQ 2006	Growth 1996-2006	DS 1996-2006
Biotech	92,440	2.40	-13%	-4%
IT Mfg	122,231	5.39	2%	-28%
IT Services	152,011	2.96	32%	73%
Oil and Coal	7,005	2.62	27%	14%
Other	2,290,766	0.90	-6%	8%

Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages, 2006.

Workforce Development

Richmond prides itself on a long history of skilled blue collar work. Richmond continues to support these skills today by investing in workforce development programs to help residents with lower educational attainment secure high quality jobs. For green jobs training, the primary program is internationally recognized RichmondBUILD, a seventeen-week pre-apprenticeship program in construction, including a three-week energy efficiency component, the GETS program conducted by Rising Sun Energy, and a three-week solar installation component organized by Solar Richmond. The program also includes training in green building standards, safety, framing, sheet rock, basic electrical, roofing, scaffolding, green plumbing and environmental literacy. RichmondBUILD facilities also house the Richmond Brownfields Job Training Partnership, which combines regular RichmondBUILD training with specific instruction in refinery safety, HAZPOWER certification, and lead, asbestos and mold abatement.

Of the first 250 graduates of RichmondBUILD, 50 (20 percent) have been placed in green-collar jobs, some in energy efficiency and half in solar. To date, RichmondBUILD graduates have a 75 percent placement rate with an average wage of \$18.33 an hour. RichmondBUILD can co-invest with employers by paying half of a graduate's salary for the first 90 days in their new job placement as an incentive for companies to hire graduates. For the period of the most recent cohort, RichmondBUILD has placed sixteen of twenty graduates, eight in public works, four in energy efficiency, three in solar, and one as a laborer. In this weak economy, the average starting hourly wage for these placed graduates has fallen to a still respectable \$13.38 with seven making over \$15. The GETS program in particular has graduated 3 cohorts for a total of 61 participants and placed 9 in energy efficiency jobs. The City of Berkeley pays to give some of

its residents access to the program. This relationship, and potential future collaboration with other cities, is one of the most important ways that Richmond benefits other members of the East Bay Green Corridor Partnership. In 2008, RichmondBUILD won the FBI Director's Community Leadership Award. The program was also selected as a semi-finalist for the 2009 Harvard Innovations in American Government award, and recently was awarded a Conservation Champion award by Senator Barbara Boxer.

Richmond also has other, lesser known green workforce training programs. For bicycle maintenance, repair and retail, Richmond has two programs, Richmond SPOKES and the Police Athletic League (PAL) Bike Safety and Education Program. In urban organic agriculture Richmond is home to a variety of non-profits that conduct training including Urban Tilth, CURME and the El Sobrante EcoVillage Farm Learning Center among others.

While few green businesses in Richmond currently use these programs, and most placements are outside of Richmond, because of the positive reputation of these programs, SunPrint, Heliodyne and SunWater Solar all have expressed interest in working with RichmondBUILD and Solar Richmond to develop new training programs when their workforce expands.

Weaknesses

In addition to Richmond strengths, there are also significant weaknesses that need to be addressed. Richmond's biggest weakness for the green economy is the reputation and reality of crime in the city. Richmond also suffers from the perception by some that it is not business friendly. The city has higher pollution rates and less alternative transportation infrastructure than some others parts of the Bay Area. Lastly, some green businesses suggested that Richmond has fewer of the retail, social/cultural and aesthetic amenities they want for their employees than other parts of the Bay Area.

A Reputation and Reality of Crime

Richmond's biggest weakness for green economic development is crime, especially violent crime, and a reputation that magnifies the city's very real public safety problems. Ten businesses including Geothermex, SunWater Solar, SunPrint, SunPower, LSA Associates, Bel Aire Displays, Cybertran, and three others noted crime as a major concern. SunWater Solar spends extra time and money driving to escort clients from BART to keep them safe. SunPrint has had trouble recruiting some high level researchers because of fears about lack of safety from violent crime. In Point Richmond, LSA Associates employees' cars are regularly broken into during work. The company bought "the club" for all of its employees. Bel Aire Displays had the copper ripped out of their HVAC system despite hiring a night guard and building a security fence. One business expressed that they only feel safe because they pay extra money for a gated, secured facility. Cybertran noted their concern about locating near the Richmond BART station because of crime. Other firms such as Geothermex and SunPower similarly mentioned their concerns about Richmond's reputation for crime. A representative from SunPower extended this concern to the larger business community, "People in Silicon Valley don't think about locating startups in Richmond because of the crime and other negative perceptions."

2008 was a banner year for reducing violent crime in Richmond. Homicides fell by 43 percent over 2007, from 47 to 27 and violent crime fell by 11 percent overall from 1,220 to 1,091. Unfortunately, Richmond's murder rate reverted in 2009 with homicides back up to the same 2007 level of 47 even though violent crime continued to fall by a modest amount to 1,051 violent crimes. Violent crime dominates media coverage of Richmond. In a search for articles over the past year about "Richmond, CA" in the San Francisco Chronicle, the first five hits address the gang rape at Richmond High School in October 2009. The sixth hit covers a February 2010 shooting at a Richmond church. It is only after these six articles, and several articles not related to Richmond, that another local topic, the Chevron Refinery is addressed.

Varying Perceptions of Business Friendliness

Several businesses felt that Richmond was anti-business or not business friendly. These businesses experienced this through lack of communication and accessibility by city elected officials, new tax proposals, and difficult permitting processes. Richmond Pacific Railroad, Chevron and Eagle Rock Aggregates all specifically described Richmond as not business friendly. They cited their lack of communication with the Mayor and City Council, ballot Measure T, other local high taxes and fees, and permitting difficulties both for themselves, and in the case of Eagle Rock and Richmond Pacific, for Chevron. Bel Aire Displays and one local remediation firm also noted delays and challenges with permitting.

The subset of green businesses that perceive Richmond to be anti-business all have overlap with conventional and often polluting industries. The Richmond Pacific Railroad does not consider itself green and is part of Levin Richmond Terminals which warehouses and exports coal, petroleum coke and other carbon intensive power sources. Chevron is, in addition to being a renewable energy company, one of the largest oil companies in the world. Eagle Rock Aggregates and Bel Aire Displays are not green companies, though they do employ some state of the art environmentally sustainable processes. None of the pure green Richmond businesses expressed feelings of anti-business sentiment in Richmond. In fact, as noted earlier, many green businesses were impressed by the ease of permitting in Richmond. While a lack of business friendliness or at least the perception of that lack should still be addressed, it is important to note, that this may be much less of a problem for green economic development than for other economic development strategies that focus on Richmond's more traditional industries. Green businesses seem to have a much more positive perception of doing business in Richmond than conventional businesses.

Infrastructure and Pollution Shortcomings

While Richmond has many strengths related to infrastructure, most notably its port, rail and highway systems, it also has several weaknesses in this area. SunPrint and one other Richmond green business both complained about the lack of efforts to limit levels of pollution from local industry. SunPrint has had to suspend operations on several occasions because employees refused to remain at work with smells of pollution outside. The sewer system in Point Richmond has failed to prevent flooding, which sometimes extends into LSA Associate's garage. National Gypsum passed on some complaints from truck drivers they work with about the condition of local roads.

Of particular concern to green firms is the lack of transit, bicycle and pedestrian access in much of the city. Geothermex remarked that one of the few drawbacks of their new location in Hilltop was that employees could no longer bike to work. SunWater Solar lamented the distance of their Marina Bay facility from BART and the safety issues that made biking uncomfortable. LSA Associates noted that their employees would like to bike or take transit to work, but do not find Point Richmond accessible without a car. SunPower currently pays for its own shuttle service from the Richmond BART station to the Ford Building. SunPrint expressed interest in a shuttle as well. This problem is exacerbated by the location of green businesses. No green businesses are located in Downtown Richmond, the one part of the city that is very accessible by transit - BART, Amtrak and AC Transit buses. Downtown, while much improved over the last few years, still suffers from crime and blight. The turn-around of this area is in progress, but will take at least a few years to complete.

Amenities for Green Workers

While the lack of amenities in Richmond was not an explicit theme of business interviews, the implied weakness is clear for much of the city. Two businesses, Geothermex and SunPrint, did infer the lack of amenities where they are located, Hilltop and Marina Bay respectively, by mentioning that they go to Point Richmond for the restaurants, shops and services that their clients and employees want. While the Hilltop area has many retail options at the Hilltop Mall, it does not have a wide variety of restaurants and Geothermex employees cannot easily reach the retail by foot. Geothermex employee preferences for Point Richmond over the Hilltop Mall fit with studies showing that employees at green companies want a more neighborhood-based, pedestrian-oriented retail experience. Downtown fails to serve as the hub of amenities that it could be. Downtown has a number of restaurants that do well, but maybe only one set up for a business meeting. There is a post office Downtown, but there are no dry cleaners or banks and only one ATM inside the FoodsCo discount supermarket.

One major contributor to this problem is that large employers, in part reacting to the lack of amenities around them, provide these amenities internally. The social security administration building in Downtown has its own private cafeteria as does the public health building in Marina Bay. The Kaiser Medical Center in Downtown and the Ford Building in Marina Bay have a cafeteria and restaurant located inside their buildings. While these are open to the public, they keep employees from venturing out into the neighborhood during lunch. Another issue is the lack of a mix of uses in some neighborhoods. Marina Bay would be able to support more stores and restaurants in the evening if it had more residents.

Opportunities

Business interviews and other research present many areas of opportunity for Richmond. Richmond has the potential to take advantage of sources of growth in the local green economy. Local businesses also recommended new environmental policies, marketing campaigns and workforce training areas that Richmond can choose to pursue. Lastly, recent negotiations with Chevron offer the opportunity to improve relations with Richmond largest employer and create a more business-friendly image.

Sources of Growth: retention, expansion, attraction and creation

Out of the 32 green businesses identified and 20 Richmond green businesses interviewed, 7 businesses, Geothermex, Chevron, SunPrint, SunPower, Heliodyne and two other businesses plan to hire new staff in the next several years, while only 2, Vetrazzo and SunWater Solar, expect to have fewer Richmond employees (Vetrazzo is currently in the process of being bought and moved to Georgia). Furthermore, the expanding businesses represent 685 jobs whereas the shrinking businesses represent only 31 jobs. While quantity of new hires and layoffs will not necessarily correlate directly with current employment levels, clearly more green businesses and larger businesses are planning to expand. SunPower alone has pledged to add 100 jobs in its Richmond facility by the end of 2010. Additionally, two green businesses, Cybertran and Alterra Energy Solutions, are both currently looking for space in Richmond.

In addition to existing green businesses growing, others will likely arrive. Interviews with green businesses reveal where they were located before they came to Richmond. Many green businesses are moving from Berkeley to Richmond as they expand. Three solar firms, SunPower, SunPrint and SunWater Solar, one green building materials firm, Vetrazzo, one environmental consultant, LSA Associates, and one recycling firm moved from Berkeley when they needed more space. These six businesses make up 621, over one third, of Richmond's green jobs. Berkeley is likely to continue producing green startups without the space to keep all of them when they expand. The East Bay Green Corridor Partnership provides an opportunity for Richmond and other East Bay cities to maintain and strengthen this green business pipeline capturing an increasing percentage of green firms that expand out of Berkeley.

Richmond also has the opportunity to grow local green supply chains. As the Strengths section discussed, several Richmond green businesses have supply chain relationships with each other. Other green businesses rely on other suppliers and customers especially related to the semiconductor and petroleum industries. These supply chains could provide another area for growth of the local green economy. SunPrint in particular noted that while currently their suppliers are in Silicon Valley, if the solar industry in Richmond continues to grow, the local suppliers will follow.

Green Businesses Care about Local Green Policies

Green businesses have a very different relationship to government policy than most businesses including much more favorable opinions about government intervention in the economy. Most green businesses are in fact reliant on government policy to address market failures and drive demand for their products. While the most effective of these policies are usually at the state and federal level, some can be implemented at the local level as well giving local green businesses an advantage over their competitors in other regions and developing the market for more local firms.

One of the local environmental policies most commonly mentioned by Richmond green businesses was municipal purchasing. Local governments have large budgets. If they choose to buy from local green suppliers they can act as first adopters of new technology and products.

Heliodyne suggested that the City of Richmond and local school district could install solar thermal systems in public buildings. This is already being done at the Richmond Plunge. One biofuels company asked that the City convert to an all biofuels municipal fleet. Vetrazzo was very appreciative of the use of their recycled glass surface materials in the new Richmond city hall. Vetrazzo in particular emphasized that the municipal purchase of their product made them feel valued beyond the financial amount of the purchase. National Gypsum noted that, nationally, the desire by governments for LEED certification of their buildings has driven them towards increasing their recycled material content to qualify as a LEED green building material.

Cities can also adopt policies that encourage local private consumption of green products, consumer incentives. Local solar thermal firm, Heliodyne, expressed that consumer incentives are critical to their business. Solar thermal installer SunWater Solar echoed this comment and asked about Richmond's proposed solar thermal rebate. SunWater Solar is also devising an over-the-counter solar thermal installation permit with the City of San Francisco that will act as an incentive by reducing permitting times in any city that adopts the permit.

Green businesses also supported several other environmental programs that Richmond could pursue. Businesses suggested programs that would increase commute alternatives to the car. SunPower, SunPrint and SunWater Solar all expressed interest in a shuttle from BART to Marina Bay. Another green business noted their eagerness for a ferry terminal in Marina Bay. Two businesses, Chevron and National Gypsum expressed interest in participating in a regional by-product synergy network (which will be discussed more in later sections). Chevron was also open to considering a City suggestion about district heating using co-generated heat from their Richmond refinery (*district heating* is the term for heat provided for a whole neighborhood from one central location, rather than each building having its own heating system). Another green business brought up the idea of bioremediation of industrial lands for urban agriculture.

Local green policies that promote green economic development have much potential. There are many options beyond what local businesses have suggested, some of which will be addressed in the Case Studies chapter. The City has already come a long way in the last several years towards becoming a leader in local environmental policy and contributing to making the East Bay a leading, environmentally conscious region. Table 14 below breaks down green policies for the East Bay Green Corridor Partnership member cities. All of the included cities are taking important steps that will generate local jobs. For example energy conservation and green building ordinances support local construction firms that use green techniques and encourage others to adopt those techniques. Solar incentives draw solar businesses to the region and cater solar design to local needs. Environmentally preferable purchasing creates additional local consumption for green firms. Richmond and Berkeley currently have the most aggressive policy goals and implementation.

Table 14: East Bay Green Policies by City, 2009

Category	Policy	Richmond	El Cerrito	Albany	Berkeley	Emeryville	Oakland	Alameda	San Leandro
Climate / GHG	Action Plan for Oil Independence by 2020	N	N	N	N	N	Y	N	N
Climate / GHG	Climate Action Plan		IP	IP	IP	Y	Y	Y	IP
Climate / GHG	GHG Inventory	Y	N	Y	Y	Y	Y	Y	N
Climate / GHG	U.S. Mayors Climate Protection Agreement	Y	Y	Y	Y	N	Y	Y	Y
Energy	Community Choice Aggregation Feasibility Study	Y	N	N	Y	Y	Y	N	N
Energy	Comm Energy Conservation Ordinance (CECO)	N	N	N	Y	N	N	N	N
Energy	Res. Energy Conservation Ordinance (RECO)	N	N	N	Y	N	N	N	N
Energy	Municipal Energy Audit		IP		OG	2006			2007
Energy	Tech. Assistance for Renewable Energy Tech	Y			Y				
Recycling/Waste	Construction and Demolition Recycling Req.	N	IP	Y	Y	Y	Y	Y	Y
Recycling/Waste	Municipal Zero Waste Goal	N	N	N	Y	N	Y	IP	N
Recycling/Waste	Styrofoam Ban		Y	N	Y	Y	Y	Y	N
Recycling/Waste	Plastic Bag Ban/Paper Bag Fee	N	N	N	IP	N	N	N	N
Recycling/Waste	Bottled Water Ban in Municipal Buildings		Y	N	Y	N	N	N	N
Recycling/Waste	Municipal Env. Preferable Purchasing	Y	Y	Y	Y	N	Y	N	Y
Green Building	Green Building Ordinance - Municipal	Y	N	Y	Y	Y	Y	Y	Y
Green Building	Green Building Ordinance - Res/Comm	Y	N	Y	N	IP	N	Y	N
Green Building	Green Building Incentives / Permit Streamlining	Y	N	N	N	Y	Y	N	N
Landscaping	Bay-Friendly Landscaping Ord. - Municipal	N	Y	Y	Y	Y	Y	Y	Y
Business	Green Business Program	N	N	Y	Y	Y	N	N	N
Business	Green Economic Development Resolution	N	N	Y	Y	N	N	N	N
Solar	Solar Installation Fee/Permit Waiver/Reduction	Y	N	N	Y	Y	N	Y	N
Solar	Solar Installations on City-owned Property	206 kw			21 kw	49 kw			
Solar	Rebates for Solar Installations	IP	N	N	Y	N	N	N	N
Solar	City Map of Solar Projects	N	N	N	Y	N	N	N	N
Solar	Revolving Loan Fund for Res. Solar Installations	IP	N	N	Y	N	N	N	N
Solar	Solar Thermal Rebate Program	IP	N	N	Y	N	N	Y	N
Transportation	Transportation-related Community Benefits Ord	N			IP	N			
Transportation	City-wide Free Bus Shuttles	N			N	Y			
Transportation	Municipal Carsharing / Green Fleet		Y		Y	N	Y		
Transportation	Bike Rack Installation Program for Businesses	N			N	Y			
Transportation	Employee Transit Benefits Req. for New Dev.	N			Y	N			
Organizational	Urban Environmental Accords	Y	N	N	Y	Y	Y	N	N
Organizational	Sustainability-related Citizen Advisory Committee	N	Y	Y	Y	N	N	Y	N
Organizational	Sustainability Element in General Plan	IP	N	N	N	Y	N	N	N
Organizational	ICLEI Member	Y	Y	Y	Y	Y	Y	Y	Y

Another measure of green policy enactment is the rate of waste diversion. California leads the country in waste diversion. According to the California Department of Resources, Recycling and Recovery, in 2006, California diverted 54 percent of its waste from landfills, incinerators and other forms of disposal generating about 50 million tons of reusable material. Many Bay Area cities are even further ahead. The Marin County Waste Management Authority diverted 72 percent in 2006. San Francisco and Albany diverted 70 percent, unincorporated Alameda County 69 percent, Hayward 65 percent, Fremont, San Leandro, Unincorporated San Mateo and Sonoma Counties 64 percent, Alameda 63 percent, unincorporated Solano County 61 percent, San Jose 60 percent and Oakland 59 percent. While Richmond's West Contra Costa Integrated Waste Management Authority comes in just under the State average at 53 percent, if Bay Area recycled materials manufacturers decide to locate in Richmond they will benefit from both access to the regional glut of recycled materials and the city's assets, such as available industrial space, good infrastructure and Recycling Market Development Zone loans.

Connecting with the Region: Marketing, Networking and the East Bay Green Corridor Partnership

Marketing the City of Richmond to green businesses and creating and strengthening new networking opportunities that connect Richmond green business with each other and with potential partners in the rest of the region provides another important opportunity for Richmond. Five businesses, Vetrazzo, SunPower, SunPrint and two others suggested that Richmond could benefit by further marketing itself to green businesses.

Vetrazzo and two other firms all generally suggested that Richmond should step up its marketing and make it clear that the City wants to attract green businesses. These businesses wanted the City to stress the existing green businesses in Richmond. Vetrazzo thought that available industrial space was a major asset that should be better publicized. Another Richmond green business focused more on marketing Richmond as a green city.

SunPower and SunPrint specifically focused on marketing to Silicon Valley. SunPower expressed concern that "Richmond could do a much better job of marketing itself to Silicon Valley. If Richmond can change its image in Silicon Valley, companies will start coming here. Silicon Valley should be a major focus of its efforts." More specifically, "The best thing Richmond could do would be to host a large annual green event sponsored by a major, well-respected institution. This would bring people from the cleantech business community to Richmond and change their perceptions. This would be a great way to connect with Silicon Valley and the cleantech industry in general. Such an event could be the kick off for a more long term marketing strategy or creating a green business association. Richmond should collaborate with the Chamber of Commerce." The representative from SunPower later added that "a shuttle from BART to Marina Bay would also be a great marketing tool."

SunPrint conveyed a similar attitude about marketing to Silicon Valley. "When people come here they realize that it is a lot nicer and safer than they thought. You have to bring them here. Try creating individual identities for Marina Bay and Point Richmond in your marketing. Market what you already have first. Show evidence that things are improving. People in Silicon Valley can understand this. In the 1980's downtown San Jose was a dangerous place. Now it is a very

nice place.” SunPrint itself markets Richmond to prospective new employees. They take prospective recruits to Salute’s for dinner and Point Richmond for lunch.

One major opportunity for marketing Richmond’s green economy is the City’s new green business website. The website will provide information about existing businesses, available properties for lease and sale, business development policy, environmental policy, the City’s green economic development initiative and other relevant local assets. The website will link to the existing City of Richmond, Richmond Business and East Bay Green Corridor Partnership (EBGCP) websites. The EBGCP website itself will also include success stories about Richmond green businesses, properties for lease, business incentives, a city description and images.

Networking provides another opportunity to connect Richmond green businesses to each other, to City government and non-profits in Richmond and to the region. Only one Richmond green business suggested green networking as an important opportunity for Richmond green economic development. However, such networking is an increasing part of green economic development strategies and academic discussions. Decentralized events like Green Drinks and EcoTuesdays are spreading throughout the country. Many regions have developed green chambers of commerce, green business councils and business associations for particular sectors such as renewable energy. The East Bay, and Richmond in particular, lag behind in these types of networks. The Center for Community Innovation found the East Bay to have one of the least networked green economies in California. They found that the City of Richmond in particular has only one link to the network, through the East Bay EDA, and no other Richmond actors play a significant role in the network.

The EBGCP presents an opportunity to address this problem of low connectivity and create a vital network for green economic development throughout the corridor. For Richmond it provides entry to key innovation partners at UC Berkeley and Lawrence Berkeley Labs and should help strengthen workforce training collaboration with local community colleges. The Corridor also offers the opportunity to scale efforts, standardize regulations and build a critical mass of demand for green products in the region.

Workforce Development

As noted in the Strengths section, RichmondBUILD provides a great foundation of expertise and credibility with federal agencies, foundations and other sources of grant funding as well as the local community. These strengths provide the opportunity to expand the RichmondBUILD program and add new green jobs training programs. Interviews with employers and City staff have indicated that one area of expansion for RichmondBUILD could be construction training that is related to new storm water regulations. New training could be developed for both a rail, bus and freight mechanic pre-apprenticeship program and solar manufacturing. Local nonprofits that train Richmond youth in bicycle maintenance and repair could also be potential future partners for City workforce training programs. In addition to these programs, the potential for a new green workforce, product demonstration, business and visitors center on 23rd and Barrett offers opportunities for better connecting green job training to local green businesses and to the community. These opportunities will be furthered addressed in the Next Steps chapter.

Chevron and Anti-Business Perceptions

As was noted in the Weaknesses section, some interviewed businesses perceive Richmond to be anti-business. One likely cause of this perception has been the taxation and permitting conflicts between Chevron and the City of Richmond over the last several years. In 2008 Richmond voters approved Measure T, which raised taxes on raw materials inputs, including petroleum for the Chevron refinery, only to have the Measure struck down in the courts. The City Council began to consider putting a new measure on the ballot in 2010 to raise the utility users tax (UUT) for the refinery. Chevron, in response, planned its own ballot measure to cut the UUT. Simultaneously, a group of environmental organizations, supported by many Richmond City Councilmembers, sued to stop the expansion of the Richmond refinery under the California Environmental Quality Act (CEQA), an issue which is still in court.

There were a number of environmental arguments for imposing these fees and increased environmental review. The refinery is the largest emitter of greenhouse gases in Richmond and one of the largest emitters in California. The refinery thus poses a major challenge for the City to reduce emissions and improve air quality for its citizens. At the same time, the refinery presents a prime opportunity—Chevron is a major profit center by any standard—to garner additional revenue in support of much-needed services and jobs for Richmond residents. Both the challenge and the opportunity have often soured the relationship between Chevron and City Hall, leading to legal disputes and the threatened closure of the refinery.

On May 11 the City Council reached an agreement with Chevron to abandon the tax measure proposals of both parties. In return, Chevron agreed to pay an additional \$114 million to the City over 15 years. This agreement takes fights over taxation of Chevron off the table in the near future and creates a window of opportunity for a better relationship. It also means a significant revenue increase for the City. This new reality should make attempts to market Richmond as a “business-friendly” city much more effective.

Threats

With opportunities come threats. Some green businesses have indicated they may leave Richmond. Barriers to green policy may prevent innovation and leave Richmond further behind its neighbors. This plan is also being developed in a context of fierce competition between cities, states and countries for green businesses and industries. Competition is made all the more threatening by a shortage of resources due to the recession.

Business Losses

While the expansion plans of local green businesses offer a major opportunity to capitalize on, they also present a major threat. Many of these businesses will leave if they cannot expand locally. In particular, Chevron, SunPrint, Sunpower, and Heliodyne have all suggested that they might relocate if the City's available space, incentives, workforce and permitting cannot accommodate their expansion plans. Several businesses have already left or significantly scaled back their Richmond operations as the company expanded. One Richmond recycled materials manufacturer moved their growing manufacturing operations overseas and now only conducts research and development in Richmond. Ecology Control Industries was bought by a larger firm

and the vast majority of its 100 environmental services jobs moved out of Richmond. Green building materials firm, EcoTimber, took its headquarters and all but a few warehouse staff to Colorado, an estimated loss of 15 jobs. Green cabinetry manufacturer, Silver Walker Studios, moved to Roseville to expand into larger more affordable space before going bankrupt, an estimated loss of 12 employees. Even more worryingly, several businesses told interviewers in 2009 that they intended to stay in Richmond, but then left. Plans can change quickly and businesses may not always be forthcoming about their plans.

Other businesses will leave because they are bought or go out of business. As noted earlier, one business, SunWater Solar, is at risk of closing or leaving Richmond due to low demand for their products in the recession. Another business, Vetrazzo, is in the process of being bought and moved to Georgia. Some business losses should be expected, but Richmond needs to work to ensure that the city does not lose both its most and lease successful green businesses.

Fierce Competition with Limited Resources

Richmond faces both a shortage of resources and fierce competition for green businesses and jobs. Several Richmond businesses mentioned attempts by other states or cities to recruit them. SunPower has been heavily pursued by cities and states around the country for new solar manufacturing facilities. In 2010 Milpitas secured the first of their solar manufacturing facilities, which will employ 100 people. Milpitas won placement of this facility by offering a \$1.5 million loan to SunPower and by developing a partnership with existing cleantech manufacturer Flextronics. When the City of Richmond interviewed SunPower for this study, in early 2010, SunPower told the City it was too late for Richmond to participate in this round of bidding for the facility.

Many other Richmond green businesses have experienced similar recruitment at a smaller scale. Vetrazzo got an offer of \$100,000 in incentives to locate in Oakland. Heliodyne has had conversations with the State of Michigan and local governments in the Detroit area about incentives for relocating its manufacturing. Bay City Mechanical was going to receive incentives to leave Richmond for Pinole before revenue declines at the City of Pinole caused the deal to fall through. SunPrint talked about the effect of national economic policy on its location decisions for their future factory. None of the Richmond green businesses interviewed had been recruited by the City of Richmond. The lack of recruitment indicates that Richmond has weak relationships with technology transfer staff at UC Berkeley and LBL where many of these businesses originate, which prevents staff from learning about businesses early on. After approaching the City on their own, some green businesses had good experiences and some received little attention. Comments from Vetrazzo, SunPower, SunPrint and two other green businesses about opportunities for marketing all imply the need to invest more resources in City marketing efforts towards green businesses.

With the current recession, the City of Richmond remains under significant financial restraints in terms of business incentives and staff time for economic development. While other local jurisdictions face similar financial difficulties, some of these jurisdictions may still commit to investing more resources in green business development. At the state level, California is one of the most proactive in terms of environmental policy, but not always in green economic

development. At the national level, European and East Asian countries are competing hard to attract innovative green companies. Richmond will face competition from its neighbors in the region, from other states and from foreign countries.

Deteriorating Hazardous Materials Permitting Capacity

As noted in the Strengths section, four Richmond green businesses, SunPrint, National Gypsum and two others commended Richmond's speedy permitting process. SunPrint in particular noted that they received in 2 months the permits that would have taken 9 months in Silicon Valley. This is a very important economic development strength for the City. Unfortunately, this strength has been weakening over time and is about to reach the point of collapse. A swift industrial permitting process depends on a skilled Fire Department that understands hazardous materials regulations and has the resources to reach out to businesses as they start to plan their facilities.

The Fire Marshal's office is losing experienced staff. In 2002, the Richmond Fire Marshal had 6 full time inspectors on staff. Two retired in 2002 and were not replaced. A third retired in 2010 with no plans for his replacement. The Fire Marshal himself will retire at the end of 2010. The remaining three inspectors have only a combined 9 years of experience. While these three inspectors have received on the job training, they do not have the previous background related to inspections or hazardous materials that is common in the most skilled Fire Marshal shops. Furthermore, the current Fire Marshal expects his replacement to be a battalion chief with no previous experience related to the position.

In addition to the lack of funding for a full staff, the Fire Marshal staff suffers from the replacement of an open and competitive exams system with an internal hiring system that places fire fighters in fire inspector positions for which they have never been trained. Furthermore, because they are sworn firefighters, these new staff members are 40 percent more expensive than better trained civilian staff would be. A lack of expertise will have major business development consequences for green sectors that use hazardous materials. As the current Fire Marshal notes "When you have an agency that doesn't know what it's doing, they throw up arbitrary barriers to new businesses. That's how you become less business friendly."

Barriers to Green Policy Innovation

As noted in the Opportunities section, environmental policy and programs have the potential to spur green economic development. However, Richmond suffers from several barriers that may prevent the city from taking a lead in green policy. These barriers include a limiting, long-term waste management contract, dependence on a County government less focused on green businesses and land use patterns and safety problems that keep residents in their cars.

One of the biggest barriers to green policy innovation in Richmond is the current recycling contract. The contract provides the lowest level of service at the highest rates in the Bay Area. Collection of a 1 yard container of refuse and free recycling costs \$193 per month in Richmond. By comparison, the same volume, with more frequent pickup, costs only \$104 per month in Hayward. Food scraps pickup in Richmond only started July 1, 2010. The contract also requires

that all recycling be performed by Republic's local branch, Richmond Sanitary Services (RSS) even for services that they do not regularly provide such as construction and demolition materials recycling. Many green businesses, including SunPower, have complained about the difficulty of recycling and reusing building materials in Richmond due to the RSS contract. This contract will remain in place for 15 years continuing to limit local recycling options as the global recycling industry innovates and changes.

A similar issue, though not noted by local businesses, is the City's dependence on a Contra Costa County government that is less invested in green economic development. In one recent manifestation of this, Contra Costa County failed to sign up in time for the first round of State PACE financing for energy efficiency improvements and renewable energy installations on buildings. Richmond cannot move forward with PACE financing until the county takes action. Richmond will have to join the second round of financing, while Alameda County cities and most of the Bay Area participate in the first round.

Richmond's suburban land use patterns and safety problems limit the opportunities for green transportation policy. More densely populated parts of the Bay Area are moving away from car dependence, increasing bicycle and pedestrian traffic, promoting car sharing and raising revenue and reducing costs through better parking policies. Because of low density land use and high crime rates, Richmond will face higher barriers towards reducing auto dependence.

Chapter 3: Industry & Location Analysis

Comments from Richmond green businesses make very clear that when we talk about the green economy in Richmond we are often talking about several different economies. The green economy in Richmond breaks down into different specific sectors. These sectors have different needs and concentrate in different parts of the city.

Out of an estimated 1,837 Richmond green jobs, 743 are located in Marina Bay, 452 fall along the Richmond Parkway, 259 lie near the Port of Richmond and 183 are in Point Richmond. The remaining 200 jobs are scattered throughout the city with small clusters in the Southern Gateway (33 jobs), near Hilltop Mall (36 jobs) and near the Cutting and Carlson Blvd's intersection (42 jobs).

Particular sectors are concentrated in particular neighborhoods as well. 652 of the 683 renewable energy jobs, over 95 percent, are located in Marina Bay and Point Richmond. Those neighborhoods combined also have about half of the green building and environmental consulting jobs. The Port contains 169 of Richmond's estimated 356 green manufacturing jobs. Along the Richmond Parkway, two government employers, BART and the West County Waste Water District, make up 278 of that area's 452 green jobs. The small concentration of jobs in the Southern Gateway is mainly in construction, landscaping and installation work. Hilltops green jobs are all in office work.

The areas of green economic growth in Richmond also reflect an overlap of geographic and sectoral factors. Of the 7 green businesses planning to hire new employees, 5 are renewable energy firms, three are in Marina Bay, one is in Point Richmond, one has space in both Marina

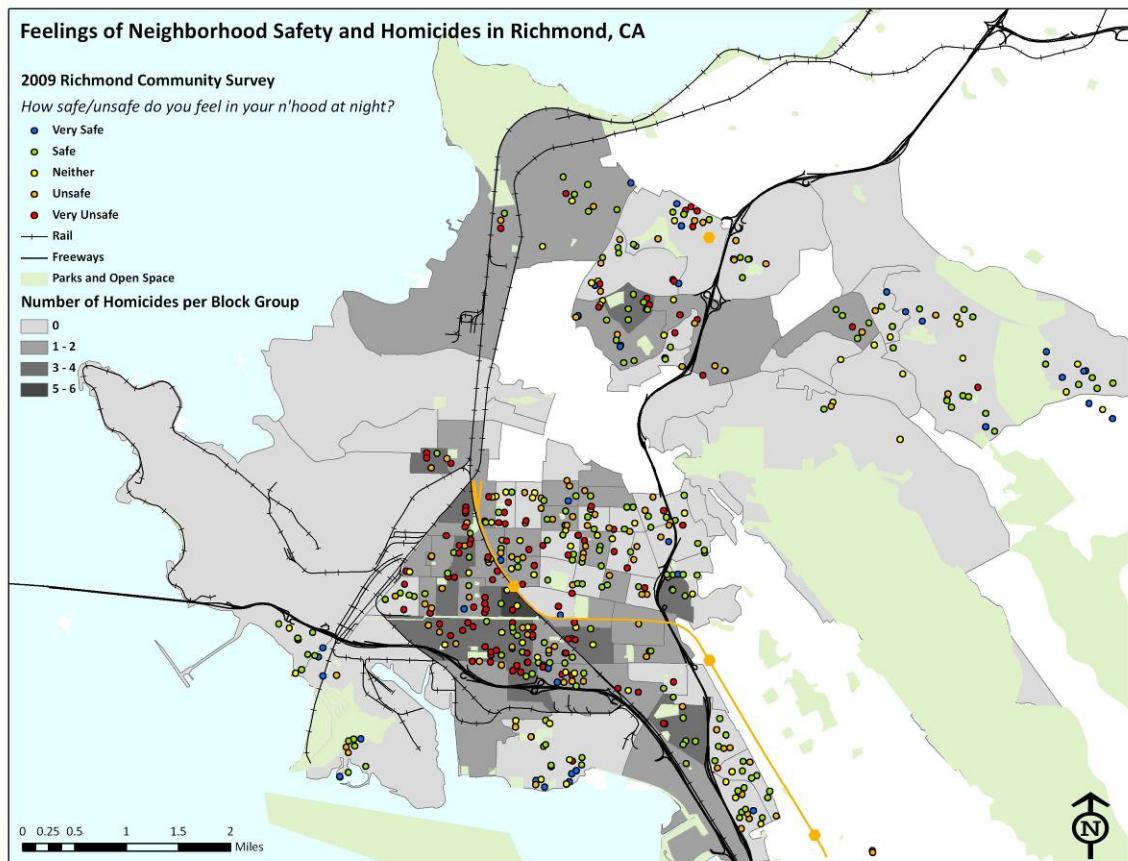
Bay and Point Richmond and two are in Hilltop. Of the firms that might layoff employees or leave Richmond, 1 is in Marina Bay, one is in both Marina Bay and Point Richmond and one is near Carlson Blvd. Three other firms have recently laid off employees, one in Point Richmond, one in the Richmond Pkwy and one in the Southern Gateway. Of those firms that have recently lost employment or may lose employment or leave, three are green building materials companies, one is in recycling, one is in environmental services and one in renewable energy. These data indicate that Richmond green employment will grow in renewable energy and in Marina Bay, Point Richmond, and Hilltop while losses will be spread more generally throughout the city and throughout sectors with a slight concentration of employment losses in the green building sector likely due to the downturn in the construction industry generally.

Green employment growth is not dependent solely on existing businesses. As already discussed, interviews with green businesses reveal a green business pipeline connecting Richmond to Berkeley. Many green businesses are moving from Berkeley to Richmond as they expand. Three solar firms, one green building materials firm, one environmental consultant, and one recycling firm moved from Berkeley when they needed more space. Three of these firms are now in Marina Bay, two are in Point Richmond and one has facilities in Marina Bay and Point Richmond. The movement pattern from Berkeley to Marina Bay and Point Richmond reinforces the idea that there is something unique happening in these two neighborhoods where green employment, mostly in renewable energy, is concentrated and growing.

Lastly, the differentiation of Marina Bay and Point Richmond from the rest of the city is reflected in the way Richmond green businesses talk about local quality of life, amenities and natural beauty. One of the Bay Area's major assets is its quality of life. Clement weather, striking natural features, outdoor recreation opportunities, great restaurants, arts and entertainment all combine to attract people from across the country. Richmond has its own share of community and arts activities and organizations, 5,888 acres of parks and open space, and 32 miles of shoreline. However, when businesses talk about natural beauty and amenities in Richmond they almost exclusively talk about Marina Bay and Point Richmond. Vetrazzo, SunPrint and SunPower all mentioned the views from Marina Bay as an incentive for locating in the area. SunPrint, Vetrazzo, LSA Associates and Geothermex all talked about the benefits of local amenities in Point Richmond and the opportunities to attract clients, investors and prospective employees by taking them to Marina Bay and Point Richmond. No other parts of the city were mentioned in this way.

Richmond businesses also perceive these neighborhoods as having less crime than other parts of Richmond and so do Richmond residents. The map below was created by City intern, Beth Altshuler. Altshuler conducted a health impact assessment of perceptions of safety using City of Richmond resident survey data. The map plots survey responses about perceptions of safety throughout Richmond. Blue dots show residents that feel very safe in their neighborhood. Green dots show residents that feel somewhat safe, yellow neither safe nor unsafe, orange somewhat unsafe and red very unsafe. While perceptions vary within neighborhoods, Marina Bay, Point Richmond and Brickyard Cove (the main residential areas South of I-580) along with eastern El Sobrante are generally perceived as the most safe by surveyed residents. The map also shows homicide rates for these neighborhoods in 2009. It is worth noting that while the neighborhoods south of I-580 have relatively low homicide rates for Richmond, the perceptions

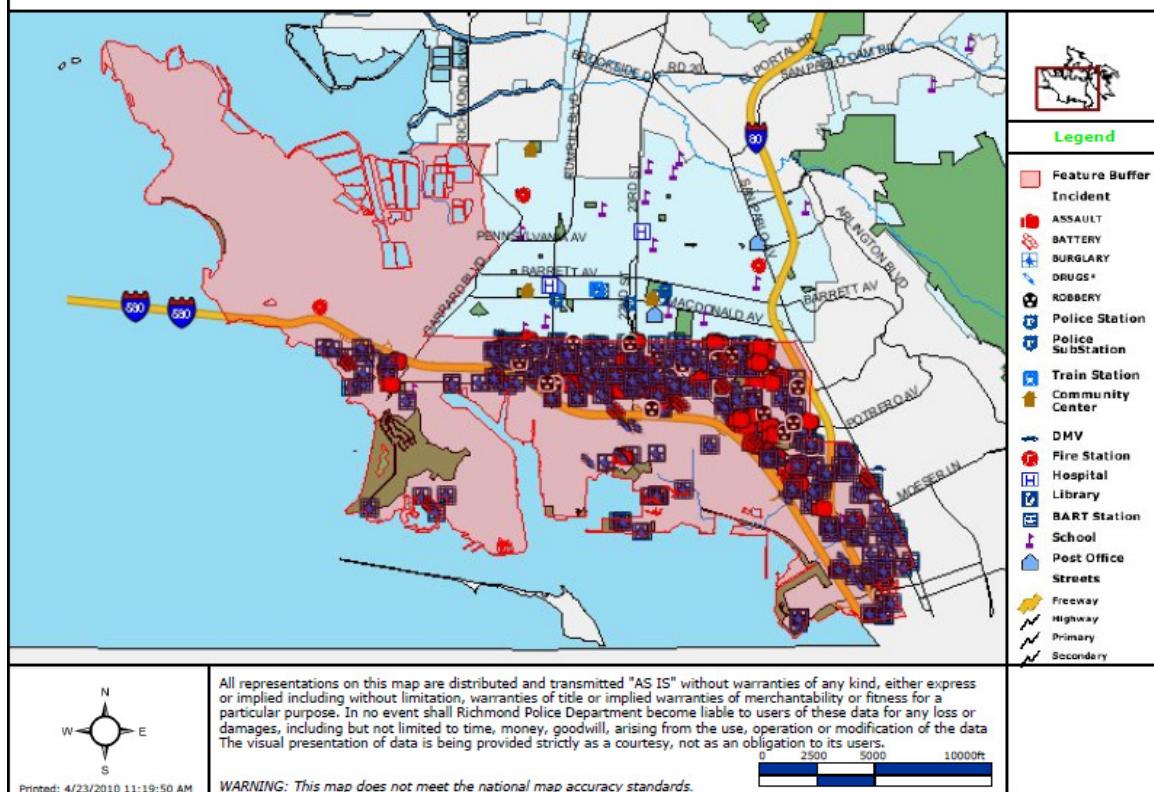
of crime are even lower. Surveyed residents in other neighborhoods with low homicide rates such as western El Sobrante, northwest Hilltop, the North and East neighborhood and the Southern Gateway are more likely to still feel unsafe. The neighborhoods south of I-580 manage to both be safe and make people feel safe.



Source: Beth Altshuler, Intern, Perceptions of Crime Health Impact Assessment, City of Richmond

The map below shows even more clearly how I-580 functions as a dividing line for crime in Richmond. The map displays non-homicide crime for a four month period ending April 23, 2010 for the Richmond Police Department's Southern Sector, the pink area. The legend on the right hand side explains the crimes that the map icons represent. While the pink area north of I-580 is almost completely covered by icons denoting criminal activity, the area south of I-580 is largely clear as is Chevron's private property and the largely uninhabited areas to the west.

Southern Sector Non-Homicide 4/23



Chapter 4: Case Studies

In addition to the strengths, weaknesses, opportunities and threats analysis, the following series of case studies offers lessons for green economic development and presents programs and strategies that should be replicable when adjusted to the Richmond context. These case studies are organized by sector and cover solar, energy efficiency, recycling and waste management, biofuels, and other topics not connected to a particular sector. The case study regions span the US and vary by size, wealth and economic assets.

Table 15: Green Economic Development Case Studies

	<u>Sector</u>	<u>Cost</u>	<u>Scale</u>	<u>Job Creation</u>	<u>Job Access</u>	<u>Focus</u>
Toledo, OH	Solar	High	Richmond & Corridor	Dynamic	Medium Barrier	Business Development
New York, NY	Green Building	Low	Richmond & Corridor	Dynamic	Low Barrier	Business Development
San Jose, CA	Green Building	Medium	Richmond	Dynamic	Low Barrier	Workforce Development
Chicago, IL	Recycling	Low	Corridor	Dynamic	Medium Barrier	Environmental Policy
Los Angeles, CA	Recycling	Profitable	Richmond & Bay Area	Low - Fixed	Low Barrier	Environmental Policy
Seattle, WA I	Biofuels	Medium	Richmond & Corridor	Medium - Fixed	Low Barrier	Environmental Policy
Seattle, WA II	Biofuels	Medium	Richmond	Medium - Fixed	Low Barrier	Business Development
Pittsburgh, PA	Biofuels	Low	Richmond	Low - Fixed	Low Barrier	Environmental Policy
Cleveland, OH	Wind	High	Richmond & Corridor	Dynamic	Medium Barrier	Business Development
San Diego, CA	Wind	Profitable	Richmond	Low - Fixed	Low Barrier	Infrastructure/Amenities
Fort Collins, CO	Cleantech	High	Corridor	Dynamic	High Barrier	Business Development
Twin Cities, MN	Green Mfg	Medium	Corridor	Dynamic	Low Barrier	Business Development
San Leandro, CA	N/A	Low	Richmond	Dynamic	N/A	Infrastructure/Amenities

Solar

Toledo, OH

Toledo, OH is the solar manufacturing capital of the US. The region is home to 15 companies and institutions and 6,000 jobs in the solar sector. The largest solar company in Toledo is First Solar with a \$16 million factory just outside the city built in 2000 and a 2008 expansion that grew operations to 834 employees. Since 2000, First Solar production in Toledo has increased 800 percent each year, annual revenue has grown from \$6 to \$500 million and production costs have fallen from \$3 to \$1.12 per watt. Other prominent Toledo solar companies include Xunlight, Solargistics and Sphere Renewable Energy/Buckeye Silicon.

Toledo created its solar industry very intentionally by leveraging the existing glass industry. Toledo is one of the centers of the US glass industry especially windshields and other glass related to automobiles. Much of the technology for developing solar panels is similar to that for high end auto glass. The University of Toledo was already a leading center of glass research. Toledo and the State together began to extend that research to solar. They created the Wright Center for Photovoltaics Innovation and Commercialization. The State of Ohio invested \$18.6 million in solar research. Half of that money went to the University of Toledo. The Wright Center received \$30 million more from federal government grants and other partners. The Center created the Alternative Energy Incubator out of which 7 solar startups have spun off.

The areas regional nonprofit development corporation, the Regional Growth Partnership (RGP), switched from an attraction, retention and marketing strategy to an innovation led strategy centered around solar. RGP started focusing on commercialization of research and startups. It started the first venture capital fund for high-tech and renewables in Ohio. Since 2007, it has

launched 40 cleantech and high tech companies with 90 more in the incubation stage. The State also developed programs to promote cleantech and high tech industries. The Third Frontier Program allocates \$1.6 billion for high tech research, commercialization and industry development. The Department of Development's Green Places Initiative's Advanced Energy Jobs Stimulus Fund provides \$150 million for advanced energy development statewide.

The other existing industry, besides glass, that is very related to solar is the semiconductor industry. Anecdotal evidence suggests that Silicon Valley, with its large semiconductor industry and deep infrastructure and experience with innovation and venture capital, is starting to catch up to Toledo in solar. The Toledo case shows the benefits of building on existing industry strengths and having state intervention that supports local and regional efforts. It also shows that local demand is not necessarily a necessary condition for green industry. Lastly, Toledo offers a blueprint for developing a local solar industry.

Primary Source: Emerald Cities: Urban Sustainability and Economic Development, by Joan Fitzgerald

Energy Efficiency, Green Building and Materials Manufacturing

New York, NY

New York City is much larger and a very different place from Richmond, but some of the Big Apple's lessons in green building business development should be applicable. New York City has been very aggressive in its environmental goals. Local Law 86 requires LEED silver certification for all municipal buildings over \$2 million and 20 to 30 percent reduction in energy use for new capital projects over \$12 million. PlaNYC, New York City's climate action plan, may be one of the most ambitious in the US.

However, the key lessons come from much smaller initiatives. For \$75,000 the City worked with the NY Industrial Retention Network (NYIRN), NYC Apollo Alliance, and Industrial and Technical Assistance Corporation (ITAC) to create the NYC Green Manufacturing Initiative. They conducted two studies that found a large local market for green building products and 1,500 companies that make building and construction related products in New York City capable of filling green building demands. Out of this study came the \$200,000 Spec It Green program.

Spec It Green holds events that connect these companies to local architects and developers and to each other. The events have attracted over 1,000 participants. Spec It Green also developed a website, www.madeinnyc.org, which includes over 750 green building materials manufacturers. NYIRN estimates an increase in sales by these businesses of \$2 million as a result of Spec It Green. Spec It Green also provides technical assistance to these firms as they upgrade and reposition themselves for the green building market.

Spec It Green demonstrates that some effective strategies are very affordable. Local green demand can grow, at least some, local manufacturing. Local nonprofit capacity can help City efforts. Local governments and nonprofits can help green manufacturers connect with consumers of their products. These lessons should be relevant for Richmond despite the radically different scales of the New York and Richmond economies.

Primary Source: Emerald Cities: Urban Sustainability and Economic Development, by Joan Fitzgerald

San Jose, CA Green Business, Workforce and Demonstration Center

The San Jose Green Business, Workforce and Demonstration Center is currently in the development stages, but could serve as a model for Richmond's proposed green workforce, product demonstration, business and visitors center. The San Jose proposal is part of the Northern California application for the Energy Efficient Building Systems Regional Innovation Cluster Initiative (E-RIC) grant from the Federal Department of Energy and 6 other Federal Agencies. The City of San Jose serves as the primary economic and workforce development partner on the proposal.

San Jose already has an Environmental Business Center with a highly successful record of cleantech commercialization. San Jose takes advantage of the innovation ecosystem and concentration of cleantech startups in Silicon Valley. The goal of the application is to connect research to beta testing, proof of concept and real demonstration opportunities for energy efficiency technologies. The new Center will not only provide beta testing facilities, but will incorporate new energy efficiency technologies into the building itself as much as possible. As new technologies are developed by businesses using the incubator space, the City of San Jose will make every effort to employ these technologies in the building as well as at City Hall and other local public buildings.

By having workforce training programs in this same facility, San Jose hopes to give students in workforce training programs exposure to cutting edge technologies to help them understand where the industry is going in the future. The connection between the business and demonstration side and the workforce component reflects San Jose's general strategy that combines the office of economic development and the local workforce investment board into the same department.

San Jose contracts with a private company, the Center for Employment Training, for its workforce training. The company has 18 training centers nationwide. The proposed new facility has 40,500 square feet. The E-RIC grant would offer about \$6 million for economic and workforce development. The lion's share of that money would go to this facility with matching funds from the City of San Jose itself.

The San Jose case stresses the importance of demonstration opportunities for energy efficiency businesses. It also illustrates the theoretical benefits of combining business incubator space and demonstration space with workforce training program space, giving trainees a window into the future of the industry they are being trained for. These concepts should inform any attempt to develop a similar facility.

Primary Source: Conversation with Scott Green, City of San Jose.

Waste, Recycling and Reuse

Chicago: Waste-to-Profit Network

The US Business Council for Sustainable Development (USBCSD) offers a service that helps regions set up a “by-product synergy” or “waste-to-profit” network. This system overcomes confidentiality and proprietary information concerns to allow the waste of one company to become an input for another company. The USBCSD staff recruits businesses, who generally have to pay a \$5,000 fee to join, collects information on by-products and inputs from member companies, connects businesses who have a potential for a sale/purchase and deals with legal issues surrounding proprietary information.

In Chicago this program has been a major success. In the first year it reached 100 companies, diverted 20,000 tons of waste, saved \$4.5 million in costs for businesses and reduced 50,000 tons of CO₂ from the atmosphere. The City of Chicago, the State of Illinois Recycling Department, the Federal EPA and a local manufacturing group paid the USBCSD \$500,000 to start the network. The USBCSD also collected a \$5,000 member fee, which covers 30 percent of the Chicago program’s budget. Smaller companies can get a free “community network” membership and attend 1 meeting per year.

USBCSD also runs a program in the Puget Sound Region, Kansas City, MO, Ohio, New Jersey, New England and the Gulf Coast.. The British government also runs a similar program, National Industrial Symbiosis Programme (NISP), with no fees for businesses and paid for by a landfill/tipping tax.

The Waste-to-Profit network in Chicago shows that not all green economic development strategies have to be about green products they can also be more generally about market failures that contribute to pollution. In this case, there is a market failure around proprietary information and industrial waste. The East Bay likely also suffers from this market failure and could look to the USBCSD for solutions.

Primary Source: Emerald Cities: Urban Sustainability and Economic Development, by Joan Fitzgerald

Los Angeles, CA Waste Conversion Technology

Waste conversion technologies convert waste to heat, energy, chemicals and other usable products. There are three main kinds of conversion: anaerobic digestion, which produces methane gas and compost; ArrosBio, which produces diesel and compost; and PlasmaArc, which produces gas, fuel, steam, chemicals and a synthetic, rock-like material. Facilities employ up to 40 people and cost between \$50 and \$500 million depending on the technology and the scale. Private companies will often install this technology at their own expense if they are promised a waste input stream. The electricity generated from the gas/fuels and the other salable products in theory provide revenue that pays for costs. Some environmental concerns remain about local contamination near facilities. LA is moving in the direction of building a conversion technology facility. The main economic opportunity here is in reduced landfill costs and revenue from

electricity and materials production. The direct job creation potential is minimal. An understanding of the local environmental costs would require further analysis.

Primary Source: Emerald Cities: Urban Sustainability and Economic Development, by Joan Fitzgerald

Biofuels

Seattle/King County

Story 1 – Leveraging Local Purchasing of Biofuels

King County Metro, the Transportation Authority for Seattle and its Eastern suburbs is the largest purchaser of hybrid diesel buses in the country, with 234 in the current fleet. The agency and the City of Seattle have attempted to leverage these purchases to create a local biodiesel industry. Seattle developed a system to use city sewage to fertilize canola crops in Eastern Washington used to make the biodiesel. A crushing facility for the oil was built near the crops in Sunnyside, WA. Metro committed to purchasing locally refined biodiesel. Seattle garbage trucks and Washington State ferries were also converted to biodiesel capability. Carnival Cruise Lines also made an order. Imperium Renewable built a refinery in Grays Harbor, West of Seattle, creating 60 jobs starting at \$19 an hour. Grays Harbor has a small break bulk port (like Richmond's), which was necessary for the location. Washington State passed a renewable fuel standard that required a certain percentage of fuel sold in the state to be biofuel.

Unfortunately, the program fell apart in 2007 when the price of Canola Oil spiked, driving biodiesel retail costs to \$6.00 per gallon compared to \$4.80 per gallon for regular diesel. This made the program economically unviable and prevented Metro, the City and other private customers from renewing their orders. State policies supporting biofuel are stronger in California and biofuels companies from Washington State, such as Propel Fuel, are moving there.

As with Spec It Green, this case shows that local government demand can be leveraged for local production that also stimulates private demand for local production. However, these types of initiatives are still at the mercy of market forces.

Primary Source: Emerald Cities: Urban Sustainability and Economic Development, by Joan Fitzgerald

Story 2 – Public Private Partnership for Biofuels

More recently, Seattle and Washington State have developed another biofuels initiative. Blue Marble Energy Corporation has partnered with the Odessa Public Development Authority to win a \$2 million award from the State Community Economic Revitalization Board. This award has created Barr-tech, LLC and the Barr Regional Bio-Industrial Park with 30 to 50 projected full-time permanent jobs and 50 to 70 construction and consulting jobs. The facilities take biowaste and make specialty bio-chemicals and natural gas using Blue Marble's technology. Blue Marble, based in Seattle, started with a pilot facility there. This collaboration is working on expanding to include a partnership with another local biofuels company, Bionavitas, which makes biofuels from algae. Other funding and support has come from Whitworth University and the Whitworth

Foundation. This Seattle case indicates that cities can participate in the biofuels industry by hosting research, development and pilot facilities that then become full scale refineries in more rural areas of the state.

Primary Source: www.barrtech.net

Pittsburgh, PA G-Tech: Biofuels, Soil Remediation, Blight Reduction

Nonprofit organization G-Tech in Pittsburgh, PA has a major land reclamation program that connects biofuels production with soil remediation and blight reduction in urban neighborhoods. The program starts with identifying and cleaning up abandoned sites that often have contaminated soil. They reclaim the vacant land through what they call “transitional bio-energy gardens” that use biofuels crops like sunflowers to improve soil quality and create an attractive green space. The sunflower seeds can then be harvested, crushed and converted into biofuels. As a further innovation, G-Tech has partnered with the University of Pittsburgh to study the life cycle environmental impacts of growing biofuels crops on marginal lands (read urban land) as compared to the lifecycle impacts of traditional fossil fuels. This will include runoff and soil remediation. (<http://www.nsf.gov/awardsearch/showAward.do?AwardNumber=0933249>). The study helps fund the program. Most recently, G-Tech has developed Project Sprout, which seeks to expand this program to other cities with similar blight and vacant property issues. G-Tech picked New Orleans as the first city for Project Sprout.

This case gives an example where a university helps carry costs of the program when a research component is added. This principle could be applied to many green programs in Richmond. Additionally, this particular program offers one way to create a green business opportunity out of Richmond’s vacant property and blight.

Primary Source: www.gtechstrategies.org

Other

Cleveland – Local Foundations Supporting a Green Economy

The Cleveland Foundation started a project to measure wind on Lake Erie in order to establish the potential for building wind turbines there. The Foundation then provided \$200,000 to start a Cuyahoga County Commissioners Regional Energy Development Task Force, which developed a plan for building offshore wind turbines and developing a wind turbine cluster. They proposed the creation of the Great Lakes Wind Energy Center (GLWEC). The GLWEC would include a pilot wind project on Lake Erie. It would also include a research and development program for new wind energy technology.

This initial effort helped jumpstart action on other fronts. The State of Ohio passed a renewable portfolio standard (RPS). Then a larger \$1 million study was conducted with funding from Cuyahoga County, the City of Cleveland, Case Western Reserve University, the Cleveland-Cuyahoga Port Authority and again the Cleveland Foundation. The next step was to build a pilot project. Turbine manufacturer MTorres Group is considering locating a wind turbine plant in

Cuyahoga County. Local governments have applied for \$90 million to support the factory. With an \$850,000 grant from the Ohio Department of Development, WIRE-Net created the WIND Network to work on helping local parts manufacturers become wind turbine suppliers. The WIND Network is currently trying to address the shortage of adequate machine tools companies and skilled workers.

The Cleveland case offers a new potential founding source for green economic development, local foundations. The Bay Area has many foundations that could similarly provide seed money that eventually leads to a much large green economic development initiative.

Primary Source: Emerald Cities: Urban Sustainability and Economic Development, by Joan Fitzgerald

Green Imports

Cities with small break bulk ports can attract wind turbine imports. Wind turbines are too big for container transport. Longview, WA, Vancouver, WA, Corpus Christi, TX and Duluth, MN have all signed contracts with foreign wind turbine importers and seen port traffic and jobs increase. The Port of San Francisco has invested \$22 million to upgrade Terminal 80 to allow for offloading of wind turbine blades. San Diego, CA probably has the largest imports of wind turbines and has had to increasingly expand and make room as those imports have grown. San Diego estimated 280 sets of 1.0MW windmills for 2007 with 20 sets per ship. San Diego expected volume to increase by 15 percent from 2007 to 2010. For the entire US, wind turbine imports from Europe and Asia rose from \$60 million in 2004 to \$2.5 billion in 2008, according to Customs data reviewed by McClatchy. In the short run, wind turbines could be a new import for Richmond's port. In the long run, however, this may not be a good strategy. Wind turbine designs are getting bigger and eventually may be too big to ship long distances. Some industry executives are even talking about on-site fabrication of wind turbines.

Primary Source: San Diego Unified Port District Business Plan Update 2008

Rocky Mountain Innovation Initiative RMI² Fort Collins, CO

Fort Collins, CO is working to develop an innovation driven economic development strategy around cleantech, biotech and geographic information systems. The key instrument in this strategy is the Rocky Mountain Innovation Initiative (RMI²). RMI² was created in 2007 by the Fort Collins Technology Incubator, founded by the City of Fort Collins, Colorado State University, CSU Ventures and the Northern Colorado Economic development Corporation in partnership with Larimer County and the Cities of Loveland and Greeley. The Initiative was developed in response to job losses in the high tech sector in the early 2000's.

RMI² runs an incubator program that provides startups with facilities, mentors and advisors, support services, business connections, fundraising, marketing, networking opportunities and education and training. The incubator is housed in a new LEED gold building with office space, a bioscience lab and conference facilities covering 32,000 square feet. A key component of the

incubator's networking work is FastTrac TechVenture, a training and networking program for new business owners that RMI² offers to startups in its target sectors.

RMI² has other programs outside of the incubator. It provides technical assistance to more established companies in its target sectors. RMI² has created a professional services network made up of businesses that provide services to startups in the target sectors. Businesses pay \$150 to become a member of the network. Members get publicity and access to networking events. RMI² also helped found the local cleantech and high-tech angel network, NoCo Angels.

Additionally, RMI² helped found the Northern Colorado Clean Energy Cluster. This initiative focuses on solar, wind, energy efficiency, green building and energy utilization. Fort Collins has a municipally owned utility that provides local demand for renewable energy and energy efficiency. Colorado State University is a lead researcher in these areas. The region already has significant employment in the targeted sectors that benefit from these local assets. The Clean energy Cluster has four initiatives. It has created the FortZED clean energy district, with a goal of surplus energy within a 50 mile radius. It has conducted a workforce development study to assess workforce needs and develop a plan for new training programs. The Smartgrid.edu program provides education about smart grid technology and promotes its adoption in the region. Lastly, the Clean Energy Cluster partners with the State Land Board to identify opportunity sites for clean energy businesses. As with the Toledo case, the Fort Collins case offers a full package program for supporting green industry that Richmond could follow.

Primary Source: www.rmi2.org

Minneapolis Saint Paul Mayor's Initiative on Green Manufacturing

Spurred by the closure of a Ford Motor Company plant in 2006 and the resulting loss of 2,000 jobs, the Mayors of Minneapolis and Saint Paul joined with the local chapter of the Blue Green Alliance to form the *Minneapolis Saint Paul Mayor's Initiative on Green Manufacturing*. The Initiative soon reached out to include other cities and private actors in the region. While the Initiative is still underway, its efforts so far can be broken into two phases. Phase I focused on studying the best manufacturing sectors for regional job growth in the green economy and the best strategies for achieving that growth. Phase II used the findings from Phase I to embark on a regional marketing strategy. While it is too early to evaluate the outcomes of the Initiative, understanding the process that the Twin Cities went through is valuable, especially for the East Bay Green Corridor Partnership, because it reflects the most developed regional partnership for green economic development in the US.

Phase I started with a study of sectors that would maximize job growth and emissions reductions. The study identified green building materials, green transportation components, and renewable energy products manufacturing. The Initiative created committees for each of these sectors with representatives from industry, labor, venture capital and local government. The Initiative then commissioned a report "Making It Green in Minneapolis and Saint Paul." The report outlined a strategy based on marketing the region to green businesses, realigning economic development tools to focus on priority green sectors, growing local markets for green products through

municipal procurement and policy, creating state policy and programs that support local and regional efforts, and building partnerships to coordinate policy regionally.

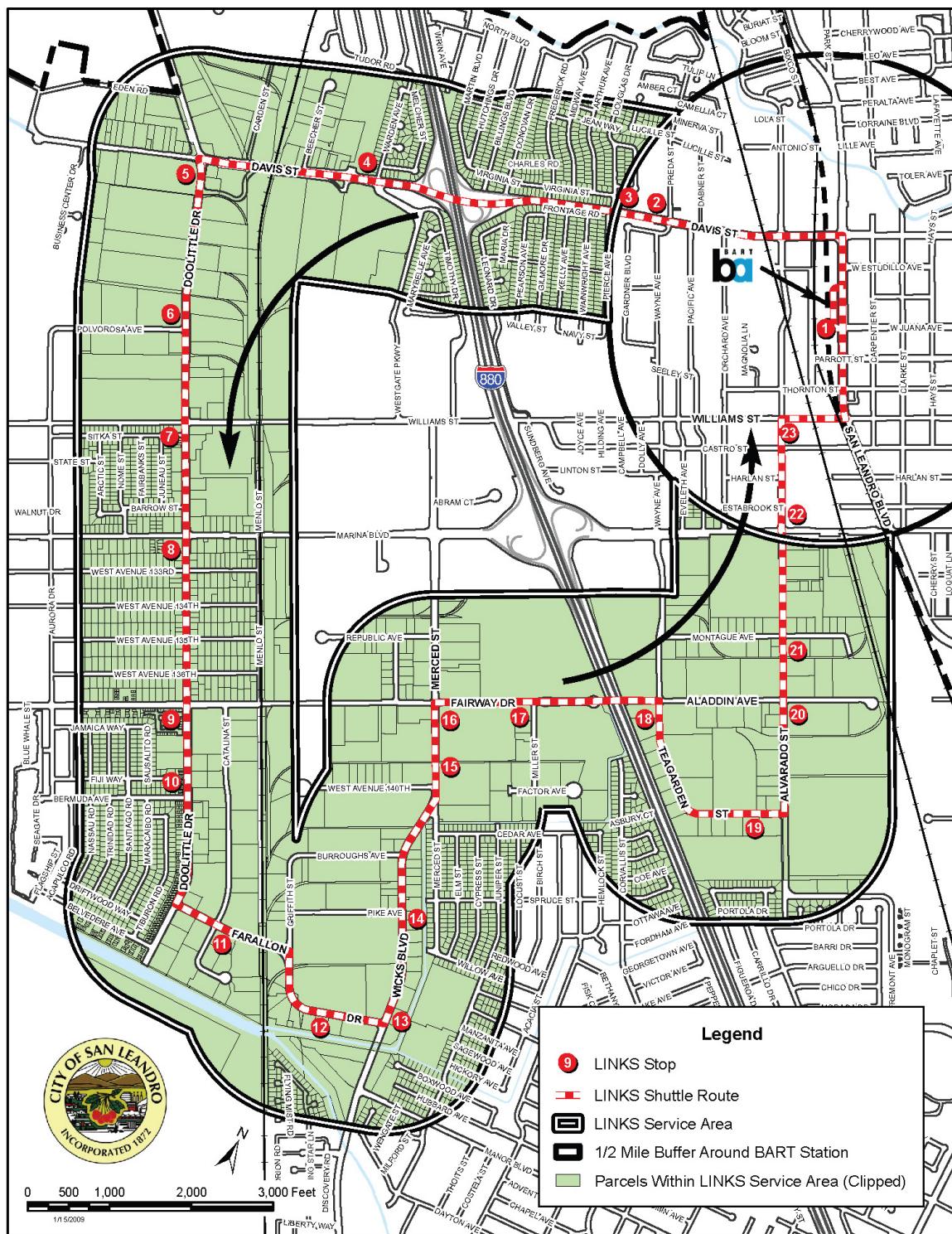
The report stressed the value of a long term focus on establishing local research capacity building on existing infrastructure such as the Institute for Renewable Energy and the Environment, the Center for Sustainable Building Research, the Center for Transportation Studies and the 700 acre University of Minnesota Research Park. The report also noted important environmental policies by certain cities within the region that could be replicated by other members of the Initiative. These green policies included Saint Paul's district energy system which serves over 80 percent of downtown, Minneapolis' solar installation and permit fee waivers as well as LEED certified buildings, energy efficiency improvements and reductions in coal source electricity from both central cities. The report also recommended taking steps to preserve industrial land, identified opportunity sites for new manufacturing and analyzed a series of green economic development case studies.

Phase II concentrated on developing a regional marketing plan called Thinc.Green, which is still under development, but should be completed sometime in 2010. Thinc.Green includes an effort towards regional branding tied to green economic development policy initiatives and a better alignment of policy among different cities within region. The development of the marketing plan started with a detailed market analysis, moved on to developing promotional materials and concluded by implementing a series of marketing programs including a green manufacturing awards program, the hosting of several green industry conferences and continuous business identification and outreach. In the process, the Initiative identified three new priority green sectors: waste reclamation, water treatment and green chemistry.

Primary Source: Making It Green in Minneapolis Saint Paul, by CDC Associates

San Leandro LINKS Shuttle Service

The City of San Leandro, one of Richmond's southern neighbors and a fellow East Bay Green Corridor Partnership member has a similar industrial history to Richmond. San Leandro has a shuttle service that connects its businesses with BART and helps workers commute by transit. This shuttle, the San Leandro LINKS, is paid for through a combination of funding sources. Businesses have agreed to a Business Improvement District (BID) which charges a flat annual fee of \$25 for each business, plus \$10.88 for each employee for businesses within ¼ mile of the shuttle route. Businesses with fewer than five employees and nonprofits are exempt. While this portion of the funding is small, it sends a signal of support from local businesses that has helped secure outside funding. San Leandro also received \$165,000 from the BAAQMD over 2 years. The Alameda County Congestion Management Agency provided \$405,000 over 3 years. The San Leandro Redevelopment Agency provides additional financial assistance as needed. The shuttle runs every 20 minutes from 5:45am to 9:45am and 3:00pm to 8:00pm every weekday. LINKS is run by a nonprofit with the board governed by members of the BID. The development of LINKS could be a model for a Richmond BART shuttle.



Source: City of San Leandro, <http://www.sanleandrolinks.com/brochure.php>

Chapter 5: Next Steps

This chapter evaluates what Richmond is already doing to support a local green economy and draws on the data and analysis from the previous chapters to make recommendations for implementation of a green economic development strategy for Richmond. The chapter is divided into ten sections. These sections address different strategies and foci for particular sectors and neighborhoods. They cover marketing including the development of a new green business website. The chapter looks at environmental policy and workforce development including a proposal for a new green workforce, product demonstration, business and visitors center. The chapter also includes recommendations on infrastructure improvements and strategies for attracting tenants to the UC Berkeley Richmond Field Station. Lastly, this chapter looks at regional strategies via the East Bay Green Corridor Partnership.

A Sector Based Strategy

Prioritizing Solar

With almost a third of Richmond's green jobs in solar, 581 out of 1,837, (excluding public sector employment, solar is well over one third) the solar industry is Richmond's clear area of strength within the green economy. SunPower, the Bay Area's largest solar employer, has the vast majority of its employment in Richmond and plans to add another 100 jobs in Richmond by the end of 2010. Chevron has also showed interest in the emerging solar industry. These major companies combined with Richmond's ecosystem of smaller solar businesses, many with high growth potential, show promise for the sector. Richmond is also home to a national leader in solar installation training, Solar Richmond and the RichmondBUILD program. This leadership in workforce training not only works as an asset for solar businesses locating in Richmond, it also helps ensure that growth in the local solar industry will translate into jobs for local residents. Making solar a priority also parallels the direction of the East Bay Green Corridor Partnership. The Corridor has also identified solar as the most promising green sector for the East Bay and is currently planning a Green Corridor Solar Energy Policy Initiative. With such large and growing local employment, with a leading innovative workforce training program already in place and with a regional initiative to support local efforts, Richmond should prioritize the recommendations from this report that benefit solar businesses. Luckily, because solar employment makes up such a large share of overall green employment, most of the report's recommendations fall into this category.

While Not Forgetting about Richmond's Other Green Sectors

Solar businesses should be the highest priority for Richmond, but the city should not forget about the other green sectors that show promising opportunities including transportation services, environmental services, green building, recycling and biofuels.

Transportation Services (418 jobs): The transportation services sector in Richmond provides maintenance and repair for transit vehicles and bicycles as well as low emissions passenger and freight transport. This sector is dominated by two large public employers, BART and AC Transit, that have chosen to locate maintenance and repair facilities in Richmond because of its location at one end of transit services and because of available space. There is a great deal of

potential for local capture of these existing quality jobs through training programs that prepare local residents for this work. A trained workforce, combined with Richmond's other assets for these businesses may help attract more private employers. In the long run, a strength in transportation services could be parlayed into transportation manufacturing if regional factors align to support such manufacturing in the Bay Area.

Recycling (251 jobs): Recycling has long had a presence in Richmond. On the supply side, the industry will grow statewide as state waste management goals are implemented. On the demand side, the Recycling Market Development Zone in Richmond will help maintain local demand for recycled materials as inputs for manufacturing. Richmond's employment in the sector currently is dominated by two firms, SIMS Metal and Richmond Sanitary Services, which together contain well over two thirds of the sector's employment. These jobs are often high quality and accessible for people with barriers to employment. Recycling does involve significant local pollution and nuisance issues. Future plans to site recycling businesses must take into account neighboring uses.

Environmental Services (236 jobs): Environmental services in Richmond include professional and technical services as well as toxic remediation businesses. The environmental services sector is made up of many medium sized businesses with 13 total businesses and no single business making up more than 1/5 of total employment. The East Bay, especially Contra Costa County, is a national leader in environmental services. Richmond industry is a major employer for these types of businesses. Richmond has the potential to leverage its industrial base to capture more of the regional employment in this sector.

Green Building (220 jobs): The green building sector includes both materials manufacturers and wholesalers as well as on site construction and landscaping firms. The construction industry, including green building, has been hit hard by the housing crises contributing to the recent sale of local green building business Vetrazzo. In the long run, however, green building has a very promising future. The City's training program RichmondBUILD has one of the most respected green building workforce training programs in the country. Additionally, there is a fair amount of overlap between the solar industry and the green building industry.

Biofuels (57 jobs): Current Richmond employment in biofuels remains very small. However, biofuels could potentially have a big future in Richmond. With UC Berkeley's grant from BP for the Energy Biosciences Institute in Berkeley and the JBEI research center in Emeryville, the East Bay is becoming a center of biofuels research. Chevron is already conducting some biofuels research in Richmond. With a significant presence from Chevron, other oil companies, their suppliers and transportation infrastructure for liquid fuel movement, Richmond could capture significant aspects of the regional biofuels industry in the future. Already one new biofuels producer is looking for space in Richmond.

A Neighborhood Based Strategy

A Green Business Hub South of I-580

1,216 of Richmond's 1,837 green jobs are located south of I-580 with 743 green jobs in the Marina Bay neighborhood alone. As discussed in the Industry and Location Analysis chapter, the green businesses in Marina Bay and Point Richmond show particular traits that further differentiate them from the rest of the city's green economy. Businesses in these two neighborhoods are more likely to have moved from Berkeley and more likely to expect to add new employees in the near future. These neighborhoods also have unique assets – the amenities and ambience of Point Richmond, the mixed uses and flexible space of Marina Bay and low crime rates along the entire southern waterfront. Marina Bay and Point Richmond also specialize in similar sectors, solar, green building and environmental services. The local solar industry and the Marina Bay neighborhood overlap almost completely, making a focus on the solar sector and a focus on the Marina Bay neighborhood almost redundant. In the center of this localized green economy is the Ford Building and SunPower, Richmond's largest green employer.

The City of Richmond and Richmond Redevelopment Agency are already taking steps to make this neighborhood more attractive for green businesses including an underpass under the rail lines, a new ferry terminal and zoning changes in the General Plan Update. Many of the recommendations in this chapter focus on the neighborhoods south of I-580 as well, especially Marina Bay including the development of a Marina Bay shuttle, the pursuit of Lawrence Berkeley Labs and other users for the UC Richmond Field Station and many of the bicycle, pedestrian, amenities, marketing and networking recommendations.

Focusing business development efforts on the neighborhoods south of I-580 raises some flags about social and economic equity. These neighborhoods are physically separated from the rest of Richmond and home to a small and wealthy population that is not reflective of Richmond residents overall. Despite these concerns, a focus on the Southern Waterfront should still be able to benefit all of Richmond. Richmond residents will still be close to jobs in these neighborhoods and the City of Richmond and the services it provides will still receive revenues from business license fees and property taxes in these neighborhoods. However, it is important that Richmond's focus on the Southern Waterfront not become myopic. In particular, a healthy Downtown Richmond, in the long term, will be very important for Richmond's green economy.

Long Term Planning for Downtown Richmond

Only a few small businesses in Richmond's green business inventory are currently located in Downtown Richmond. However, in the long run a successful green business development strategy must make Downtown an attractive place for these businesses. As noted earlier, green businesses want proximity and access to transit. Downtown Richmond will always be the most transit accessible neighborhood. Additionally, from the perspective of many green businesses and technology transfer staff people interviewed for this study, Downtown is representative of Richmond. Richmond's reputation will always be dependent to some extent on the health and quality of Downtown.

As noted in Chapter 3, Richmond green businesses mainly criticize Downtown for having poor public safety and lacking the walkability, ambience and types of stores and restaurants that they want. This criticism is not unique to Richmond green businesses. The city of Richmond 2009 Community Survey found that 50 percent of surveyed Richmond residents felt very or somewhat unsafe in Downtown Richmond during the day and 87 percent felt very or somewhat unsafe in Downtown Richmond at night. Furthermore, the feeling of safety in Downtown was the variable that best explained whether Richmond residents took transit to work based on analysis by graduate student and City intern Beth Altshuler.

Richmond is already taking steps to address these issues through streetscape, pedestrian and bicycle improvements, housing development, and other programs all discussed in the Infrastructure & Amenities section of this chapter. The Infrastructure & Amenities section also makes several suggestions for additional areas of work especially focusing on the largest existing Downtown employers, Kaiser, the Social Security Administration and the City of Richmond, as well as more focus on Downtown by the Richmond Police Department.

Green Center

Richmond's green business development efforts can gain a lot from building connections to the existing workforce programs. The new RichmondBUILD 3 (RB 3) facility offers an important opportunity to create such connections. The Employment and Training Department envisions this facility as a workforce, product demonstration, business, and visitors center that houses parts of the RichmondBUILD training program, adds training for small building contractors and also showcases the products and services of local green businesses, connects those businesses to workforce program students and graduates and brings in and educates residents about how to be more environmentally responsible.

A Workforce Training Center

The RB 3 facility has a budget of \$950,000 over 2 years. The facility spans 12,000 square feet including the lobby, hands-on training space, and classroom space and is currently leased by the City from a private owner. An adjacent warehouse space is vacant and could be available for expansion of the facility. RB 3 hosts the Richmond Brownfields Job Training Partnership, the energy efficiency lab, Contra Costa College's green building courses, the electrical lab and the green plumbing components of RichmondBUILD. Like the other two RichmondBUILD facilities, RB 3 has an energy efficient "mock house" where students gain hands on experience with infrared camera technology, blower doors, various insulation techniques and materials, and solar installations, retrofits and other aspects of their training. RichmondBUILD is currently working to enhance these facilities to create a state of the art weatherization center modeled after LA Trade Tech's weatherization facility.

A Product Demonstration Center

Two key features that distinguish the RB 3 facility from other training facilities are its prime location and the 3,500 square foot lobby area. The City's current plan is to use three sides of the lobby to showcase innovative products from local green businesses. The fourth wall would contain a map of Richmond green businesses and other promotional and educational materials. Local green business products could also be displayed in the mock house where

RichmondBUILD training takes place. Products would be grouped by industry with a rotation of exhibits. RichmondBUILD students would serve as greeters and docents in the lobby educating visitors about the products, the RichmondBUILD program and other Richmond environmental efforts. RichmondBUILD would also work with local green businesses to identify other opportunities to demonstrate products within the building itself. This demonstration and visitor center concept is in part based on the City of San Jose green business, demonstration and workforce center proposal discussed in the Case Studies chapter. The City of San Jose has found that demonstration opportunities are very valuable to new and innovating green businesses.

A Small Business Center

Employment and Training Director, Sal Vaca, is looking into further cementing the connections between RichmondBUILD and local businesses by offering trainings at RB 3 for small building contractors. These trainings could cover both new green building techniques and courses on entrepreneurship and starting your own business. RichmondBUILD could draw on its partnerships with Build It Green for the former and the Small Business Development Center of Contra Costa County for the later. In the long run, these small business programs could expand to follow something like the RMI² case study, combining access to facilities and training, with mentors, advisors, support services, business connections, fundraising, marketing and networking.

A more specific networking opportunity related to green building would be to have, at RB 3, some of the aspects of New York City's Spec It Green program discussed in the Case Studies chapter. Spec It Green brings together green building materials manufacturers with architects, developers, contractors and retail stores interested in green products. With green products already displayed in the Center and small contractors using the facility for green building training, the lobby could host events with speakers related to specific green building topics. The City already has several green building materials manufacturers, retailers and potential users of those materials.

Green Building Materials Businesses: National Gypsum, EcoTimber, Cooper Lighting, Bay City Mechanical, Heliodyne/SunWater Solar, SunPower, Real Goods Solar, Chevron Energy Solutions

Architects, Developers and Contractors Interested in Green Products: Interactive Resources, Advanced Home Energy, Bueno Luna Landscape Design, JP Construction, John Towns & Associates, Residential Design Works, Red Company LLC, Geoff Zawacki Engineering, KL Hampton Group, Michaela Graham, Milton Tong Architect, Green Energy Solutions Architect, Larry Carter Consultant, Lawrence Construction

Construction-Related Retailer that Sell Green Products: Urban Farmer Store, Channel Lumber, The Floor Store, Acapulco Rock & Soil, Universal Building Services

If a Spec It Green type program is a success, the City could develop similar programs for other sectors. For example, RB 3 could host a forum for environmental service providers to meet with businesses that need their services. Another event could connect recyclers to recycled materials manufacturers. A third event could showcase local green transportation service providers.

These events would be focused on connecting Richmond businesses with each other. By having them at RB 3, the events would also connect these businesses to RichmondBUILD and its students.

A Visitors Center

RB 3 should also be a place for the community and for people visiting Richmond and interested in the green economy. The classroom space, when not being used for regular RichmondBUILD and small business classes, can be opened for community education efforts. Given the RichmondBUILD curriculum, the site should be particularly effective for educating residents about basic energy efficiency home improvements, how to use their home in a way that minimizes energy use and smart meter training classes. Once the CaliforniaFIRST PACE financing program is in place, RB 3 can also be used to educate residents and businesses about the program and help them complete an application for financing. RichmondBUILD students and graduates will be able to help with these education programs, passing on some of the knowledge they have learned to their neighbors. Other green education programs could include organic vegetable gardening and cooking classes, classes on taking care of and making basic repairs to your bicycle, safe biking instruction, presentations about new waste management services such as food scraps collection and other environmental education programs. The facility could also host a tool lending library with RichmondBUILD graduates staffing the library, checking out tools and making sure residents know how to use them. The City should contact Berkeley tool lending library staff to learn how Berkeley implemented their program.

RB 3 can also function as a visitor center for people from outside the city. This applies to people from the Bay Area who do not know about the important green work happening in Richmond. This also applies to the many groups that come to the Bay Area to see and learn about the region's green economy. The facility, with all its varied programs could be a great marketing opportunity for Richmond. East Bay Green Tours already visits RichmondBUILD facilities. The City should work with them to develop Richmond tours that start, end and spend significant time at RB 3. It should also work to have RB 3 included in Bay Area wide tours. People taking the tour would get to see the showcased products in the lobby and learn about RichmondBUILD and the many other programs that will be created. The City can work with East Bay Green Tours staff Marissa LaMagna and Emmet Brady by contacting them at (510) 759-7624.

Green Business Website

The City of Richmond and the East Bay Green Corridor Partnership are both currently developing green business websites. The City's initial efforts to create a green business website have inspired an overhaul of the entire business website. The green business website will become one "track" on this new website. Each track will be designed to identify different types of users and cater to their particular needs. Interest in green business will indicate one type of user. The green track will publicize Richmond assets that have been identified as most important for existing Richmond green businesses. This will include information about existing Richmond green businesses and their experiences. The site will connect users with important resources related to available space, incentive programs for green businesses and consumers, workforce development programs and upcoming networking and other events.

One of the most important issues for the site is maintenance. The information on the site needs to be as up-to-date as possible and new content should be developed to bring the target audience back for repeated hits. The City needs to identify a staff person that can coordinate maintenance of the site. This person will coordinate other staff people from the Redevelopment Agency, the City Manager's Office, the Planning Department and other departments who have access to the data and content that needs to be periodically updated. Such content will include information about business incentive programs, workforce training programs, environmental policies and consumer programs, available space for sale and lease and a current inventory of green businesses in Richmond. Maintaining a current inventory will likely require creating a green business identification system through the business permitting process and regular updates from economic development staff.

The City site will be designed to automate as much maintenance as possible. It will also use an open source wordpress format that is easy to update even by City staff without significant web experience. Because wordpress is so common, it will also be easier to find low costs web design services if/when significant changes are required.

The City of Richmond green business website and the East Bay Green Corridor Partnership (EBGCP) Website should complement each other. The City has already submitted a variety of materials for the EBGCP website including a one page business success story, details of two opportunity sites, green business incentive information, a description of the City of Richmond, and a host of digital images related to various aspects of the green economy and green business location decision-making. To keep this content current, the website's coordinator will also need to work to maintain the Richmond content of the EBGCP website.

Other Marketing

A Large-Scale Green Economy Event

Many businesses told City interviewers that bringing the green business community to Richmond, especially to Marina Bay and Point Richmond, is an important way to dispel negative stereotypes and show off Richmond's strengths. One suggestion businesses made for doing this was to host a major cleantech or green economy event. Richmond probably has the greatest opportunity to host such an event by doing so through the East Bay Green Corridor Partnership (EBGCP). The EBGCP is about to start planning for its next event focused on venture capitalists. City staff are already planning to see if the Corridor is open to having the event in Richmond and what the City could do to further persuade them. Given the desire to focus on Marina Bay, the most logical location for the event would be the Craneway in the Ford Point Building. Some parts of the event could also be held in the Civic Center Auditorium. Richmond could also look into other partners including cleantech organizations such as Next10 and GreenBiz.com, industry associations for specific green sectors, such as solar, biofuels and green building, or environmental and labor coalitions that focus on green jobs such as the Apollo Alliance, Green for All, the Transportation Equity Network or others. Cybertran, which is looking to move to Richmond, has expressed an interest in sponsoring such an event. UC Berkeley and Lawrence Berkeley Labs might also be potential partners, especially if some connection is made to the UC Berkeley Richmond Field Station (to be discussed later in more detail).

Socially Responsible Venture Capital

The City should also look into working with the socially responsible venture capital community. Socially responsible venture capital consultant, Morgan Simon, along with grant oversight committee member, Professor Karen Chapple, both suggested developing a proposal that could be submitted to socially responsible venture capital leader, Stephen DeBerry. Such a proposal could involve working with local foundations to invest in green businesses in Richmond. Such a strategy would be similar in some respects to the Cleveland case study in which the Cleveland Foundation helped develop a cluster of wind energy businesses and wind industry focused innovation in Cleveland. Instead of wind, a Richmond initiative of this sort would be best focused on the solar industry.

Green Business Networking: Green Drinks and Eco-Tuesday

Green Drinks and Eco-Tuesdays are two existing formats for green business networking in the Bay Area and throughout the US. Green Drinks is the more common, but is less-structured and has a less business specific format. Green Drinks are held in almost every region of the US and designed as networking “for people working on environmental issues” including green businesses. The events are held monthly at a local bar and open and free for anyone who wants to come. There is no agenda. Most Green Drinks have an organizer and a core e-mail list. They also receive a page on the GreenDrinks.org website. The East Bay already has two Green Drinks, one in Oakland, and a less frequently hosted one in Berkeley. Green Drinks does not allow corporate sponsorships, advertising or profit from the events.

The main requirements for Green Drinks would be a location, a coordinator and an initial group of at least a dozen people who want to attend. The most promising locations are probably Hotel MAC in Point Richmond or the Boiler House/Craneway and Salute's in Marina Bay. The coordinator could be a City staff person, most likely in the City Manager's Office or the Redevelopment Agency. It could also be someone from the Chamber of Commerce or a local environmental nonprofit. The coordinator would need to establish an initial list of people who will attend.

EcoTuesday is a more business-focused, more structured, and less common alternative to Green Drinks. EcoTuesday always takes place on the fourth Tuesday of the month. The event starts with a presentation on a green business or technology topic and is followed by a round of introductions with the remaining time reserved for more informal networking. Each EcoTuesday chapter has at least two Ambassadors. The Ambassador has all the responsibility of the Green Drinks organizer, with many more additional tasks. The Ambassadors have to find speakers for each event, facilitate the discussion and introductions, and write regular blog posts about the local chapter. EcoTuesday events already take place in San Francisco and Silicon Valley, but not in the East Bay. EcoTuesday recommends finding an event space that serves both alcoholic and non-alcoholic beverages. EcoTuesday seeks corporate sponsors for each event.

The best locations for EcoTuesday are also probably Hotel MAC, the Boiler House/Craneway and Salute's. At least one Ambassador (and ideally both) would not be City staff. The EcoTuesday option would require significantly more work, but might also have more potential to draw cleantech business leaders throughout the East Bay. The City of Richmond would need to

work to identify potential private-sector Ambassadors. EcoTuesday and Green Drinks are not necessarily mutually exclusive. City of Oakland staff member, Steve Lautze, has expressed interest in working with Richmond to strengthen green business networking in the East Bay and could be a partner in these efforts.

The Richmond Field Station

Richmond green businesses and UC Berkeley technology transfer staff alike note the benefits of bringing Richmond closer to the networks of research and innovation in the East Bay as well as the importance of a second cleantech anchor tenant in Marina Bay to complement SunPower and the Ford Building. UC Berkeley's Richmond Field Station (RFS) offers the opportunity for both.

Currently the RFS hosts an eclectic mix of the University's work including a forest products lab, integrated biology research, an earthquake engineering research center, facilities for the Institute for Transportation Studies and the Northern Regional Library Facility (NRLF) which stores books for the UC library system. The main user is the engineering department especially for large engineering equipment.

Lawrence Berkeley National Labs (LBL) is currently looking into a second campus for its expansion. The RFS could be a potential contender. UC Berkeley has already issued an RFQ for consultants who could study a research center development at the Field Station. LBL is in the process of hiring new staff to lead the search for a second campus. When this new person is hired, they will contact the City of Richmond to discuss the process for identifying potential sites. Conversations with UC Berkeley and LBL staff reveal that the RFS needs better connections to the surrounding neighborhood, better shuttle access to the main UC Berkeley campus and BART and improved safety and amenities in order to be competitive. If the RFS does not win the new LBL campus, the process of competing for it will still leave the site well prepared to attract other research facilities.

Workforce Development

In addition to the Green Center, Richmond has the opportunity to develop new workforce training programs. These include preparing for solar manufacturing opportunities, adding a storm water component to RichmondBUILD, partnering with public transportation services employers to create a rail, bus and freight mechanic pre-apprenticeship program, and supporting existing bicycle mechanic and sales training programs run by local nonprofits.

Thin-film solar photovoltaic company, SunPrint, is considering developing a manufacturing facility in Richmond. If manufacturing is done locally, SunPrint would like to work with RichmondBUILD to develop a training program for the resulting jobs. With solar thermal equipment manufacturing already occurring at Heliodyne, solar polycrystalline photovoltaic assembly at SunPower, and other solar firms expanding in the region, there may be several opportunities to develop a solar manufacturing training program in the coming years. Richmond should continue conversations with these local businesses and be ready to go when the opportunity presents itself.

In response to new State regulations, the City of Richmond is currently in the process of adopting new storm water regulations. There are two areas of this regulation that will require new skills and could connect to job training. The first is on the set up of construction sites. Laborers on construction sites will need to implement erosion control measures (jute netting, fiber blankets, compost blankets, etc), sediment control measures (wattles, silt fences, etc), run-on and runoff control (earth dikes, drainage swales, active treatment systems, etc), and have other skills related to the use of green products and materials. The second opportunity is around the new low impact development standards. All new construction covering over 10,000 square feet (and 5,000 square feet by 2011) of impermeable surface must put in a low impact development storm water system. This mainly involves building bio-swales and infiltration planters instead of conventional storm water drains. The Bay Friendly Landscaping and Gardening Coalition already gives trainings in this and is paid by the City of Richmond and other local government members of the Contra Costa County Clean Water Program. Anyone who contracts with the City and other local governments that are part of this program must pay to have their workers trained and certified by them. If RichmondBUILD graduates already had this training, it might be an incentive to hire them over other job applicants. The City should follow up with storm water director Lynne Scarpa to get connected with the Bay Friendly Landscaping and Garden Coalition and other potential partner organizations.

As noted earlier, Richmond has a high level of employment in green transportation services with 418 jobs identified. The largest share is from BART which employs 240 utility workers, janitors and mechanics in its Richmond yard, cleaning, repairing and maintaining railcars. AC Transit has a similar facility in Richmond for its buses with 49 employees. These public agencies are complemented by smaller employment levels at school bus provider, First Student, biofuels powered truck freight hauler, Blue Sky Shipping, local-serving rail freight provider, Richmond Pacific Railroad, and vintage bicycle re-assembler Litton Cycles. For their mechanics and electronics technicians, BART and AC Transit both hire out of apprenticeship programs and local community colleges. Both agencies have expressed interest in working with the City of Richmond to develop a pre-apprenticeship program that would set Richmond residents on the path to these local jobs. Training for these public sector jobs may also provide relevant skills for similar private sector employment and in the long run could create a base of skilled workers to support new transportation services businesses or even transportation manufacturing. Contact Patrice McElroy ((510) 464-6885 Pmcclro@bart.gov) at BART and Joe DeProspero ((510) 891-7147, jdeprosp@actransit.org) at AC Transit to follow up on this opportunity.

Bicycling is another growing area of green transportation. Two local organizations, the Police Athletic League and Richmond SPOKES both already provide training related to bicycle maintenance, repair and sales. While these organizations were not interviewed for this study they may offer another area for green workforce training for the City. The Employment and Training Department should look into the need for such training and future opportunities for the City to partner with these local organizations. Contact Brian Drayton ((510) 387-7466, brian@richmondspokes.org) at Richmond SPOKES and Larry Lewis ((510) 621-1221, lLewis@richmondpd.net) at Richmond PAL.

Infrastructure and Amenities

Shuttle from BART to Marina Bay

A shuttle from Richmond BART to Marina Bay could be a promising response to the concentration of green businesses and jobs in Marina Bay and their desire for alternatives to car commuting. If done right, such a shuttle should also help strengthen the retail and amenities presence in Marina Bay and promote a greater sense of neighborhood and spur interactions between green businesses that can facilitate the spread of tacit knowledge. A shuttle could also be used as a marketing tool for green businesses. A representative from SunPower, Richmond's largest green employer, concluded that, after hosting a major cleantech event, having a shuttle from BART to Marina Bay would be the best way to attract attention from the Silicon Valley cleantech business community. The increase in amenities and business interaction are also cited by Lawrence Berkeley Labs as important conditions for their interest in the Richmond Field Station as a site for a potential second research campus. In addition to its economic benefits, a good shuttle program should also reduce transportation-related greenhouse gas emissions.

In 2009, the City of Richmond applied for a Bay Area Air Quality Management District (BAAQMD) Grant to fund a shuttle from Richmond BART to both Marina Bay and Richmond Civic Center. The proposal requested \$576,000 for Marina Bay, \$100,000 for Civic Center and \$33,800 for administration with a match of \$103,000 from the City of Richmond and the West Contra Costa Transportation Advisory Committee in the form of staff time, transportation demand management and vehicle donation. This funding would have supported both shuttles for two years. Marina Bay and Civic Center are both in what the BAAQMD considers Priority Communities and Priority Development Areas, which should give Richmond priority over other applicants without this designation. Despite this advantage, the funding was denied.

According to the BAAQMD program coordinator, Deepti Jain, this was mainly because the cost per rider was too high. A competitive proposal should cost less than \$9 per day, per rider who would otherwise drive alone. Based on the City's 2009 survey, the Marina Bay shuttle would have diverted 350 riders and the Civic Center shuttle would have diverted 45. This results in a cost per rider of \$6.85 and \$9.26 respectively. It appears that the lower cost-effectiveness of the Civic Center shuttle brought down the larger proposal. Jain recommended eliminating the Civic Center route, reducing the dollars requested, increasing matching funds, adding ridership survey data from AC Transit and using alternative fuel vehicles. Specific information on current commute distances for new riders was also not provided in sufficient detail.

Jain also expressed skepticism about the validity of the ridership figures projected in the grant proposal. The City knows now, from having run its own shuttle to Civic Center over the last year, that Jain was right, at least for the Civic Center portion. 45 riders was a far too optimistic projection. Instead, ridership averaged 6 to 7 per day. On the other hand, the ridership for Marina Bay may have been underestimated (or at least not as overestimated) and the funding needs from BAAQMD overestimated. While records of the business survey appear to have been lost, Linda Young at WCCTAC remembers a fairly short list of employers, California Department of Health Services, Kaiser Regional Lab, Kaiser Allied School of Health, Bio-Rad and PG&E. Furthermore, the grant states that employment in Marina Bay is well over 1,000. A more specific figure would be helpful, especially since the actual employment total is at least 2,000 and likely much higher. Residents in Marina Bay were not surveyed or included in the

ridership projections. Lastly, Marina Bay has a planned site for a new ferry terminal which should also generate riders for the shuttle.

On the revenue side, while WCCTAC and City staff had conversations with employers that already provide their own shuttle service, no attempt was made to secure matching funds from these employers. The California Department of Health Services alone already spends \$600,000 a year to serve 242 employees per day. This sum is larger than the entire two year grant request for Marina Bay. Orton Development has a more limited private shuttle for the Ford Point Building which carries about 25 riders per day and costs about \$96,000 a year. UC Berkeley provides hourly shuttles from the main campus in Berkeley to the Field Station in Marina Bay. The portion of AC Transit's 74 bus that serves Marina Bay would also be unnecessary if it could be replaced by shuttle service. A Marina Bay shuttle would allow these private and public providers to reduce or eliminate their own transportation offerings. The savings could be put into supporting the common shuttle. Other businesses could also be willing to contribute a small sum to support the shuttle. Lastly, the Contra Costa Transportation Authority, as the County Congestion Management Agency, could contribute funds similar to the Alameda County Congestion Management Agency's contribution to the San Leandro LINKS.

The City of Richmond should conduct a new business survey with better business outreach and more specific questions about current commutes to demonstrate single occupant vehicle use reduction. City staff working on the proposal should then contact the employers and current service providers below to seek matching funds. The Civic Center shuttle should be eliminated from the proposal. The City should remain in close communication with Deepti Jain ((415)749-5075, djain@baaqmd.gov) to verify that the 2010 proposal fits with the BAAQMD expectations.

California Department of Health Services – Margaret Martin and Gary Gascone
Orton Development – Ivonne Inurritegui-Folster (510) 758-7690, iif@ortondevelopment.com
UC Berkeley – Doreen Moreno (510) 643-6781, dmoreno@berkeley.edu
AC Transit – Puja Sarna, (510) 891-4867
WCCTAC – Linda Young (510) 215-3008, lindsay@ci.san-pablo.ca.us
Richmond Chamber – Judy Morgan 510.234.3512, judy@rcoc.com

Bicycle and Pedestrian Improvements

In addition to public transportation access, green businesses also care about bicycle and pedestrian access and the kind of neighborhoods that depend on walkability. Richmond is currently creating its Bicycle and Pedestrian Master Plans. The Bicycle Master Plan will focus on the development of a complete on and off-street bicycle network that includes safe and accessible connections to the Bay Trail and Richmond Greenway and that improves difficult areas to bike through, such as freeway interchanges and railroad crossings. The network will include local routes on neighborhood streets, as well as important corridors such as Barrett Avenue. It will identify opportunities for new, secure bicycle parking at key locations. The Bicycle Master Plan will also provide guidance on programs that educate and encourage residents and out of town commuters to ride a bike.

The Pedestrian Master Plan will identify improvements for pedestrians throughout Richmond with a focus on collision hot spots and low income neighborhoods. The City will conduct walk

audits to inform the Plan. The Plan will also address creating safe routes to school and investigate opportunities to add fingers/branches out from the Richmond Greenway. Areas of focus for the Plan will include, Downtown, around the Richmond BART station and MacDonald Ave; San Pablo Ave; 23rd Street; Harbour Way; Cutting Blvd; Carlson Blvd; Marina Way; Ohio Ave; Pennsylvania Ave; the Vale Rd and 29th Street intersection; and the borders of North Richmond.

Consultants for both Plans are currently conducting workshops for city residents. From an economic development perspective it is important that these plans also receive input from businesses, especially green businesses that have expressed interest in improved walkability and bikability and the desire for alternative commute options for employees. Improvements for commuting and other necessary trips are more important for businesses than improvements focused on recreational routes such as along the Bay Trail and in El Sobrante. Fehr and Peers, the consultants for the Bicycle Master Plan have already received information about green businesses that have expressed interested in alternative commute options for their employees and should follow up with them (Geothermex, SunWater Solar, LSA Associates, SunPrint, and SunPower). Ideally green businesses, even if they did not explicitly express interest, would be identified as potential sources of bike commuters. Once the plans are successfully developed, the City must still find funding sources to build out the plans.

Fehr and Peers and City transportation planning staff expressed interest in businesses that can offer showers and lockers for bike commuters. To reduce fixed costs per employee, the City should look into shared facilities of this type. For Point Richmond, the Richmond Plunge could offer access to lockers and showers for bike commuters who work in the neighborhood. For Marina Bay, the City could encourage a system where businesses pay to get access to the facilities at the Ford Building.

Richmond BART Station Area Improvements

Related to the Pedestrian Master Plan are a series of BART/Amtrak/AC Transit station safety, streetscaping, housing and other redevelopment projects that are already underway. Many green businesses expressed a preference for being near a transit station, but did not locate at the Richmond BART station because of concerns about safety and the shortage of amenities for employees.

The Redevelopment Agency is already seeking to address this issue, currently developing a transit village around the station which will eventually include 231 for sale townhomes, 20,000 square feet of commercial space, and a new parking structure. Phase 1 has already been completed with 132 townhomes and 7,500 square feet of commercial space. This first phase included pedestrian connectivity improvements on the west side of the station. The Redevelopment Agency is currently seeking funding for improvements east along Nevin Street including Crime Prevention Through Environmental Design (CPTED) improvements. These initiatives would also connect the BART station to the Richmond Civic Center and make it easier and safer for City staff to take BART to work. Lastly, the Redevelopment Agency is partnering with the County Health Department to develop programming that will further encourage walking and biking Downtown.

Despite these changes underway, several barriers will remain that keep people who work near the BART station isolated from the public space. For the neighborhood to improve the major employers (the City, Kaiser, and Social Security Administration) and their employees must become more engaged. For example, the City, until recently, paid for a shuttle from BART to Civic Center. While this shuttle did offer City employees a safe route from the BART station to their offices, it did not serve any economic development purpose. If a program was instead developed to encourage City employees to walk or bike the 7 blocks down Nevin to BART it would make the neighborhood safer and more vibrant. A pedestrian program would both benefit from and add to the physical improvements to the streetscape.

Similarly, on the west side of the station major employers Kaiser and the Social Security Administration discourage their employees and customers from using the surrounding neighborhood. Kaiser offers a shuttle from BART to their medical center, keeping people off the streets. Both employers provide cafeterias that discourage restaurants from locating in Downtown. The City should try to work with these major employers and the Downtown Richmond Mainstreet program to motivate these major employers to change their behavior to better support the redevelopment of Downtown Richmond.

Port Improvements

As the Case Studies chapter noted, wind turbine imports are one way that small ports around the US are using the green economy to grow. However, in the Richmond context this may not be the best strategy. Wharfage is the major source of revenue for the Port of Richmond. Wharfage is based on weight and wind turbines require a lot of infrastructure and work per ton, producing less revenue for the amount of infrastructure needed to support them. Wind turbine offloading requires more liability insurance and heavy lift cargo that the Port currently does not have. If Richmond had the same wind turbine throughput as San Diego, the largest US port for wind turbines, it would generate only \$156,000 per year. Furthermore, the Port of San Francisco is already adding new infrastructure improvements to try to capture wind turbines destined for installation in Northern California. Still, Port staff expressed openness to letting wind turbines companies know that Richmond would be interested in hearing any new proposals for wind turbine shipments.

Many steps can also be taken to green the operations of a port. These include regulations to reduce truck idling, promotion of rail over truck delivery and pick up of goods, cold ironing (off-shore power) for stationed ships and renewable energy installation among others. Due to a California Environmental Quality Act lawsuit regarding the proposed new Honda auto facility, the Port of Richmond must conduct a new Environmental Impact Report for the project. The Port has taken the opportunity to conduct an environmental impact review of the entire port including the development of a Clean Air Action Plan which should be completed by Fall 2010. The EIR will allow the Port and the City to move forward on the best recommendations for environmental improvements to port operations. State and Federal environmental regulations and funding for improvements are currently focused on large containerized ports. When changes have been implemented at those facilities, the focus will shift to smaller ports. With the EIR completed, Richmond could be in a good position to secure funding as a pilot for these changes at the small port scale.

Environmental Policy

As was noted in the Strengths section, Richmond is already a leader in local environmental policy. Environmental policies, when done right, can create green economic development by compensating for local market failures, driving local consumer demand and providing first adopters that can attract and foster innovation and business development. Without going into too much detail about all of the City's environmental policies and initiatives, what follows are some key areas related to economic development.

Green Operations Technical Assistance Program

All businesses, regardless of the products and services they offer, can green their operations. However, many businesses neglect even cost effective changes because they lack the knowledge of how to make those changes. Furthermore, many technical assistance programs already exist in the Bay Area to help businesses with this greening. The key missing link lies in helping Richmond businesses connect with the existing programs that can most benefit them. Richmond can develop a technical assistance program that fills this gap. Such a program could be delivered at relatively low cost, consisting mainly of staff time, pamphlets and handouts about existing programs, and some low-cost materials such as recycling and compost bins. Such a program would be an easy way to help businesses meet their bottom line, protect the environment and further Richmond's image as a green city.

Solar Thermal Permitting

Local solar thermal installer SunWater Solar and the City of San Francisco are developing a streamlined, over-the-counter solar thermal permitting system. When the permit is completed, SunWater Solar will share this with the City of Richmond. This permit will make the process for installing a solar thermal system easier. Furthermore, by adopting a common permitting procedure with San Francisco, Richmond can help reduce the difficulties associated with learning new permitting regulations for each city. According to building permit staff, so far Richmond has permitted very few solar thermal installations. This will likely change as State incentives are implemented and marketed in the summer of 2010. City staff must keep in touch with Chris Chapell at SunWater Solar (cchappell@sunwatersolar.com, (510) 233-0300) and Nathaniel Jade Juhl at the City of San Francisco (Nathaniel.Juhl@sfgov.org, jade.juhl@sfgov.org, (415) 355-3780).

Utility Users Tax

A utility users tax (UUT), taxes the utility use in local buildings including cable, gas, electricity and telephone. It is one of the most commonly employed taxes in California. Rates can vary by land use type – residential, commercial, industrial, etc – and by utility type. The UUT offers the opportunity to change local consumer incentives.

Richmond already has one of the highest UUT rates in the State at 10 percent for gas and electricity and 9.5 percent for other utilities. Only Culver City and Seal Beach have higher rates, at 11 percent. Similarly, Richmond currently receives one of the highest percentages of its revenue from the UUT, 32 percent as of the 2005 to 2006 fiscal year. Only Holtville and Compton were higher.

The UUT, at least for gas and electricity, is essentially a pigovian tax on greenhouse gas emissions, forcing users to pay closer to the true cost of the power they use. This higher cost, in turn, encourages the adoption of energy efficiency measures. The benefit of a tax on energy rather than a subsidy for energy efficiency improvements is that it generates revenue rather than incurring costs for the City and also discourages overall energy use. In economic terms, it has a price effect and an income effect that both reduce greenhouse gas emissions whereas a subsidy for clean energy has a price effect that reduces greenhouse gas emissions, but an income effect that increases it by lowering overall energy prices.

With such a high UUT, Richmond should be one of the most favorable places for energy efficiency work. The major flaw with Richmond's current UUT is that it applies equally to renewable energy, both onsite and offsite. In order to encourage these installations, Richmond could put a measure on the ballot to exempt on-site renewable energy, such as solar photovoltaic panels and small wind turbines, from the tax. This change would reduce City revenues and it may be best to wait until City finances are improved before making this change. Exempting renewable energy produced elsewhere would be more difficult. The energy sources offered by PG&E to the majority of its customers are mixed. In some cases individual customers can choose to pay PG&E an additional fee to receive only renewable energy. One option would be to exempt customers that opt for these higher cost renewable energy plans. Further legal research would be necessary to identify how to formulate this change in the tax.

Another option would be to make the UUT more of a true greenhouse gas emissions tax by raising rates on gas and electricity while lowering rates for other utilities to make the change revenue neutral. As long as the revenue goes towards a general purpose, increases or changes must only be approved by a majority of voters. UUT tax increases are often accompanied by non-binding advisory use language rather than binding designation of uses in order to qualify for the lower voting threshold. In 2008, 74 percent of Richmond voters approved Measure B, which updated the telecommunications and video (cable) UUT to address changing technology in a way that was revenue neutral. Measure B shows that voters are willing to support UUT changes if their total tax burden does not change.

The existing UUT applies to residential, commercial and industrial uses. Changing rates for industrial buildings could dramatically alter costs for Richmond's current industrial sector and would not apply to Richmond's largest utility user because of a recent UUT settlement between the City and the local refinery owner, Chevron. This agreement could cause added aggravation on the part of the remaining industrial businesses which would have to pay the tax increase. Many industrial businesses spend far more on natural gas and electricity than they do on other utilities such as telephone service and cable. These businesses would be hard hit if the UUT changed as proposed above. Richmond would need to evaluate the likelihood of certain businesses leaving and the strategic value of those businesses before proposing a change to UUT rates for industrial businesses. Changing the UUT for residential users would have less effect, with most households making up the increased cost from higher natural gas and electricity prices through lower prices on other utilities. A residential focused tax shift of this type could also have the added benefit of promoting internet use by Richmond residents if the phone (DSL) and cable taxes are reduced.

PACE Financing

Financing is a major barrier to energy efficiency improvements and renewable energy installation because upfront costs are high, the returns on investment take many years and mortgage markets, which would ordinarily fill this need, are currently tight. Property Assessed Clean Energy (PACE) Financing has been an important breakthrough for overcoming these obstacles. Developed in Berkeley, PACE Financing has now spread throughout the country and is currently being implemented as a State of California program, CaliforniaFIRST.

As noted by Richmond staff working in this area, the County recently passed a resolution joining the State financing program. Richmond now must promote existing and implement new energy efficiency programs that can link to PACE financing including City ARRA-funded programs, PG&E Programs, ARRA funded County programs, East Bay Energy Watch Programs (Smart Lights (commercial) and Smart Solar) and the DOE Home Star program. The administration of CaliforniaFIRST is managed by Renewable Funding, a private LLC contractor, under the authority of the JPA California Communities. With the first counties implementing the program, it is still unclear if the interest rate will be low enough to attract homeowners. The Federal Housing Finance Agency has recently put up a new obstacle to PACE financing, by declaring mortgages with PACE related liens risky. Congress is considering legislation to overrule this decision. The interest rates will be determined in fall 2010 when CaliforniaFIRST issues its first bonds.

Fire Department Inspection Capacity Maintenance/Improvement

As noted in the Threats section of Chapter 2, the Richmond Fire Department is on the brink of losing its ability to quickly and effectively minimize hazardous materials and fire risks. With two retirements this year, including the retirement of the current Fire Marshal with 27 years of on-the-job experience, the remaining three inspectors will have only 9 years of combined on-the-job experience and no previous relevant experience or training. This lack of experience could be devastating not just for streamlined approvals of green businesses that use hazardous materials, like solar manufacturers and biofuels producers, but also for the review of the potential upcoming Chevron refinery expansion. According to the current Fire Marshal, in order to avert this loss, new inspectors must be hired through a system of open and competitive exams. New inspectors should be recruited from outside the fire department with backgrounds in chemical engineering, industrial hygiene, and fire and life safety. Such recruitment will not only provide more qualified inspectors, it will also likely result in the re-civilianization of the Fire Marshal's shop at a salary and benefits cost savings of up to 40 percent. Additional resources should also be found to bring the Fire Marshal's shop back up to full staffing with six inspectors in addition to the Fire Marshal.

Waste Water Biosolids and Conversion Technology

The City of Richmond is currently part of a Bay Area-wide effort to create energy from biosolids. In 2006 several San Francisco Bay Area agencies executed a Joint Exercise of Powers Agreement (JEPA) to address biosolids management issues impacting residents and the environment around the San Francisco Bay Area. Plans are currently underway to explore the benefits and feasibility of jointly creating a regional biosolids solution, known as the Bay Area Biosolids to Energy (BAB2E) Project. The intent of this Project is to convert the biosolids to energy and become a net energy producer. BAB2E is committed to helping achieve state and

federal goals of meeting electricity and low carbon fuel needs with renewable sources. Working with local wastewater agencies, cities, environmentalists, and the public, BAB2E aims to capture the energy within biosolids on a larger scale and in a more efficient method. The coalition of agencies is actively seeking state and federal funding to support this regional endeavor.

BAB2E is looking to create one regional biosolids facility. The Richmond City Council has come out against siting the facility in Richmond because the city already has a landfill and other local environmental hazards. Still, it may be worth conducting an analysis of the pros and cons of such a facility being located in Richmond including local employment opportunities, synergies with private businesses and revenue from energy generation balanced against environmental harm, health impacts, nuisances and negative effects on the city's image and marketing efforts. Even if the facility is located elsewhere, Richmond may be able to capitalize on some of the job creation and revenue benefits.

Biofuels Production and Demand

While the major opportunities for growth in the local biofuels industry may be years away with the development of second and third generation biofuels technologies, the City can take two steps to lay the foundation for growth in the biofuels industry now. The first step would be to get in touch with Pittsburgh, PA nonprofit G-Tech to find out about becoming a future site for their Project Sprout initiative detailed in the Case Studies chapter. G-Tech should be able to identify whether Richmond would be a good candidate for a local Project Sprout program ((412) 241-1013, info@gtechstrategies.org). The second step would be to identify opportunities to create local demand for biofuels through City and waste management fleets. The beginning of research into this option would involve contacting City staff member Dee Karns ((510) 231-3044) about the City fleet and Richmond Sanitary Services staff person Shawn Moberg ((510) 262-7143) to assess opportunities with their garbage and recycling truck fleet. The proposal for a Marina Bay shuttle could also be devised to include biofuels powered vehicles.

East Bay Green Corridor

An East Bay By-Product Synergy Network

As discussed in the Case Studies chapter, the US Business Council for Sustainable Development (USBCSD) assists regions in setting up what it calls a By-Product Synergy (BPS) Network that helps businesses work together to find synergies that reduce pollution and increase profits. Synergies can be materials or logistics related. Andy Mangan, Executive Director of the USBCSD provided information about the steps necessary for setting up a BPS Network in the East Bay.

A BPS program usually starts by making a list of the top 200 companies in the region, generally companies with over \$100 million in revenue. The goal is to recruit about 30 of these businesses as the core of the network. Smaller businesses and city departments, utilities, waste management, road maintenance and other relevant public agencies can become members after this core is established. Chevron is a member of the USBCSD and participates in BPS programs in other regions.

The USBCSD usually starts by identifying potential local partners. Mangan believes that the East Bay Green Corridor Partnership (EBGCP) could be a good public partner. He believes that for the network to be successful, it needs to have several founding private partners as well. He also emphasized that a BPS network is a good way to build public-private sector relationships, something the EBGCP wants to do more. The City of Richmond can take the initiative to start identifying a few initial enthusiastic businesses that could form a steering committee. Mangan has already provided materials that advertise the benefits of BPS. The City has initiated a conversation on this project with Katrinka Ruk at the Council of Industries ((510) 215-9325, kpruk@sbcglobal.net) and Paul Millner at Chevron ((510) 242-2164, paulmillner@chevron.com) to gage interest from Richmond industrial businesses. If there is local interest, then the City should work with Carla Din and the EBGCP to evaluate interest from the other Corridor partners and start identifying companies in other parts of the region. If he sees enough initial interest, Mangan will come to the East Bay in person and make a presentation and talk with interested partners one on one.

The USBCSD provides legal services, a materials database, analytical tools related to industry processes, economic and environmental decision-making tools, and project support. Their goal is to turn the project over to a local group once it gets set up. Their continued involvement would be mainly to access East Bay data to help other regions and in turn to offer insights from other regions to the East Bay.

The main costs are in the first year and generally range from \$150,000 to \$200,000 for a region of the East Bay's size. The costs are usually covered in part by private business members - \$5,000 for bigger companies, \$2,500 for medium sized companies. Other small companies or nonprofits can get more limited memberships for free or at least a much smaller fee. Those smaller players would also get more limited access to the network and its benefits. The public sector would still need to contribute \$50,000 to \$100,000 to cover all costs for the first year. After the first year, costs fall considerably and are mainly in terms of staff time.

Implementation Steps

- Step 1: Region identified
- 2: Evaluate for suitability
- 3: Identify and recruit local partner or project manager
- 4: Obtain local and regional support for project
- 5: Obtain funding
- 6: Team orientation and training
- 7: Creation promotion and outreach materials
- 8: Recruit network members
- 9: Implement meetings
- 10: Synergy ID
- 11: Data gathering
- 12: Analysis and prioritization
- 13: Overcoming barriers
- 14: Action plans

Regionalization of Standards, Incentives and Programs

Many of the programs that this study proposes for the City of Richmond may be even more effective if conducted at the regional level. The East Bay Green Corridor Partnership may allow such regional coordination giving all participating cities an advantage in the green economy.

Regional standards for green industries could be a major benefit to local green businesses. This report already suggested that Richmond adopt the solar thermal permit program being developed by the City of San Francisco. Such a permit would be even more effective if adopted by the entire East Bay. The East Bay cities could also seek to standardize their permitting and fees for solar photovoltaic installations, energy efficiency retrofits, district heating and other green construction related work. Such regional standards also often become the basis for new State standards that can benefit green businesses throughout the State.

The Utility Users Tax (UUT) and other green consumer incentives offer another opportunity for standardization. Richmond already has a very high UUT. Other East Bay Green Corridor cities have lower UUT's. Unincorporated Contra Costa County, where other oil refineries are located, imposes no UUT. If other East Bay cities and counties raised their UUT's to Richmond's level, they could lower taxes in other areas, shift regional taxes towards energy consumption and dramatically incentivize energy efficiency improvements and renewable energy installations. Raising the UUT in a coordinated fashion would also reduce the potential leakage of residents and businesses which might otherwise move to neighboring cities to avoid the tax. The table below shows UUT rates for East Bay Green Corridor Partnership cities.

Utility User Tax Information Summary Listing

City	Intra state	Inter state	Int'l	Wireless	Private Com.*	CATV	Electric	Gas	Water	Sewer	Trash
Richmond*	9.5%	9.5%	9.5%	9.5%	9.5%	9.5%	10%	10%			
Alameda	7.5%	7.5%	7.5%	7.5%		7.5%	7.5%	7.5%			
Albany	7%	7%	7%	7%			7%	7%			
Berkeley	7.5%	7.5%	7.5%	7.5%		7.5%	7.5%	7.5%			
El Cerrito*	8%	8%	8%	8%		8%	8%	8%	8%		8%
Emeryville*	5.5%	5.5%	5.5%	5.5%	5.5%		5.5%	5.5%			
Oakland*	7.5%	7.5%	7.5%	7.5%		7.5%	7.5%	7.5%			
San Leandro*	5.7%	5.7%	5.7%	5.7%	5.7%	5.7%	6%	6%			

Source: www.uutinfo.org

Notes: R=Residential

N=Non-Residential

Name in Bold denotes MuniServices Client Public Agencies

* Voter-approved ordinance (approved after 2002) <http://www.statelocalgov.net/state-ca.cfm>

A third area for standardization and coordinating is workforce training. Richmond already provides green jobs training to Berkeley residents through RichmondBUILD. In return, Richmond gains access to employers in Berkeley and City of Berkeley funding. Richmond potentially could expand this arrangement to other EBGCP cities. Such an arrangement would further solidify Richmond's role as the regional expert in green workforce training. The City would need to further research potential negative impacts.

Richmond could also coordinate preferential hire and purchasing requirements with other EBGCP members by developing a second hire and second purchase agreement. Under this arrangement, in the cases where Richmond currently has a local hire or local purchasing policy for green work and products, it could establish a policy that gives preference to workers and firms from other East Bay cities if they could not be found in Richmond itself. The other cities would need to then reciprocate with a similar policy.

Regional Spec It Green

If the Spec It Green program is a success in Richmond, the City could suggest expanding it to the entire East Bay Green Corridor. Including a larger area will create more opportunities for matches in terms of products and needs and would more faithfully resemble the original New York Spec It Green program. If the events continue to be held in Richmond, it could also offer positive publicity for the city within the green building business community.

Biofuels Triangle

Michael Cohen, Director of the Technology Transfer Office at UC Berkeley suggested that Richmond develop a branding concept of a “Biofuels Triangle” that combines Berkeley, Emeryville and Richmond. Berkeley’s contribution would be UC Berkeley and its various labs, including EBI, as well as the main Lawrence Berkeley Labs campus. Emeryville would contribute the JBEI lab campus and its existing biofuels businesses such as Amyris Biotechnologies. Richmond would contribute Chevron, other petroleum refining businesses and biotechnology companies. Cohen suggested that Richmond would probably need a second major biofuels tenant to make itself believable as the third point in such a triangle and to spark interest from Berkeley and Emeryville which are currently doing fine in the biofuels arena without any association with Richmond. Richmond should remain on the lookout for such a tenant.

Conclusion

In Richmond, the current recession comes on top of chronic unemployment and poverty for a significant portion of residents. There are many signs that despite the hard economic times nationally, Richmond is beginning to move towards a brighter economic future. By developing a comprehensive economic strategy, the City is building momentum towards that future.

This green economic development strategy takes advantage of global economic trends and national and state policy changes. It diversifies Richmond’s economy and reflects Richmond’s particular strengths and needs while remaining true to the city’s environmental values. The recommendations, based on literature review, employment data analysis, interviews and case studies identify opportunities in all facets of local and regional policy. This report takes care to spell out in detail the next steps for implementation of these recommendations, which should help create new businesses, jobs and tax revenue for Richmond.

Appendix A: Action Items

I. Business Development: Recruitment/Retention/Expansion/Creation

A. Green Center

1. *Flesh out vision for the Center*
2. *Identify and pursue funding sources*
3. *Secure local green products for display*
4. *Develop educational materials and wall size green business map*
5. *Offer classroom space to community green education efforts*
6. *Create tool lending library based on Berkeley example*
7. *Work with Small Business Development Center of Contra Costa County to create small business/contractor entrepreneurship and business management trainings*
8. *Incorporate contractors into Build It Green and other green building and energy efficiency trainings*
9. *Add equipment to match LA Trade Tech state-of-the-art weatherization center*
10. *Host networking events*
11. *Provide a hub for green tourism and marketing efforts*
12. *Explore the San Jose model that connects green business development programs with workforce development programs*

B. Website: Green is Gold

1. *Delegate coordination of in-house management/maintenance capability and identify sources for content updates for both City and EBGCP websites*
2. *Combine with www.richmonca4business.com*
3. *Develop automated system to update real estate data from brokers*
4. *Link to EBGCP website*

C. Marketing Plan

1. *Create PowerPoint presentation to market Richmond to green businesses*
2. *Plan major green business event with EBGCP and/or other partner(s)*
3. *Work with East Bay Green Tours to grow Richmond green tourism with focus on Green Center*
4. *Promote EZ/TEA, RMDZ and Richmond's green business-friendly profile*
5. *Develop long-term marketing plan along the lines of Minneapolis-St. Paul's Thinc.Green*

D. Richmond Field Station

1. *Promote as site for 2nd LBL campus, including follow up with Sam Chapman*
2. *Investigate opportunities to increase UC Berkeley uses*

E. Permitting

1. *Work with City of San Francisco and SunWater Solar to implement solar thermal over-the-counter permit system*
2. *Develop plan to prevent loss of HAZMAT permitting capacity*
3. *Survey businesses to find out why perception of difficulty in permitting exists*

F. Networking

1. *Delegate staff coordinator for Green Drinks/EcoTuesdays*
2. *Pursue outside co-coordinators for Green Drinks/EcoTuesdays*
3. *Assemble mailing list for Green Drinks/EcoTuesdays*
4. *Initiate small scale Spec It Green type gatherings at Green Center*
5. *Invite Silicon Valley businesses to event or tour here*

G. Green Business List

1. *Develop system to maintain Richmond green business list that includes the business permitting system, business development staff knowledge and potentially outside sources such as www.econovue.com*

H. Business Outreach/Assistance

1. *Commit more resources to business recruitment and retention efforts*
2. *Follow leads on businesses showing an interest in Richmond*
3. *Recruit existing business suppliers and customers*
4. *Prioritize green businesses in surveys, forums, face-to-face meetings, and rapid response to business opportunities and threats*
5. *Target business assistance programs, such as revolving loan funds, to support green businesses*
6. *Build relationships with UC Berkeley and LBL technology transfer and commercialization staff*
7. *Institutionalize Berkeley-Richmond business pipeline*
8. *Leverage contacts with State and Federal elected officials to secure introductions to businesses*

I. Alternative Angel and Venture Capital Investment

1. *Work with Morgan Simon to develop proposal to Stephen DeBerry that targets foundations and socially responsible venture capitalists to invest in Richmond green businesses*

J. Focus on Certain Sectors

1. *Solar - including creating demand for installation and prioritizing permitting capacity for solar research and manufacturing facilities*
2. *Transportation Services - including exploration into providing alternative transportation and building relationships with major employers*
3. *Recycling – including creating demand for recycled-content products and marketing benefits of RMDZ*
4. *Environmental Services – including promoting cleanup of contaminated land and encouraging Richmond industries and developers to hire local firms through relationship building/networking*
5. *Green Building – including increasing demand for energy efficiency retrofits in businesses and residences and helping local contractors gain skills and certification in green business*
6. *Biofuels – including attracting businesses that use 2nd and 3rd generation technologies and improving permitting capacity for research and production facilities*

K. Focus on Certain Neighborhoods

1. *Marina Bay – including increasing amenities*
2. *Point Richmond – including improving sewer and storm water infrastructure*
3. *Downtown – including attracting more pedestrian oriented retail and improving safety*

4. Port – including the greening of facility operations
5. Richmond Parkway
6. Southern Gateway
7. Hilltop

II. Workforce Development

A. Green Center

1. Help RichmondBUILD students build relationships with contractors and other green businesses to open up future employment opportunities
2. Empower RichmondBUILD students to someday start their own businesses
3. Expose RichmondBUILD students to cutting edge new green technologies
4. Employ RichmondBUILD students as greeters, docents, teacher's assistants for community education classes, tool lending library staff, and other jobs onsite.

B. New/Expanded Training Programs

1. Continue conversations with SunPrint about future solar manufacturing training program
2. Evaluate benefits of adding storm water training component to RichmondBUILD; hold meeting between RichmondBUILD staff, storm water staff and the Bay Friendly Landscape and Gardening Coalition
3. Pursue opportunities to place Richmond residents in utilities and mechanics jobs at AC Transit and BART Richmond facilities; evaluate benefits of developing pre-apprenticeship program for transit mechanics
4. Build relationships with PAL and RichmondSPOKES bicycle mechanic and sales training programs
5. Ensure city contracts require the hiring of RichmondBuild grads where applicable

III. Employer/Employee Infrastructure and Amenities

A. Transit Improvements

1. Apply for BAAQMD grant for BART to Marina Bay Shuttle
2. Conduct new survey of Marina Bay employers
3. Conduct Marina Bay resident survey
4. Ask Marina Bay employers with existing shuttles to contribute matching funds for grant
5. Negotiate matching funds from AC Transit to replace 74 bus
6. Look into creating BID and nonprofit to run shuttle
7. Identify opportunities for graduate student assistance with proposal

B. Bicycle and Pedestrian Improvements

1. Include green business input into bicycle and pedestrian master plan
2. Work with County Health Department to promote walking including applying for MTC grant opportunities
3. Pursue neighborhood locker and shower facilities for bicycle commuters

- C. Work with Major Employers to Improve Connections to Their Surrounding Neighborhood and Provide Incentives to Utilize Local Businesses
 - 1. *City of Richmond*
 - 2. *Kaiser*
 - 3. *California Health Services Department*
 - 4. *Social Security*
 - 5. *Chevron*
- D. Focus on Certain Neighborhoods
 - 1. *Downtown – including improvements to Nevin Street from Bart to Civic Plaza*
 - 2. *Marina Bay*
 - 3. *Hilltop*
 - 4. *Southern Gateway*
 - 5. *Point Richmond*

IV. Environmental Policy

- A. Special Projects
 - 1. *Provide technical assistance to help Richmond businesses green their operations*
 - 2. *Contact Pittsburg, PA nonprofit G-Tech about expanding their Project Sprout program to Richmond*
 - 3. *Prepare for second round of CaliforniaFIRST financing*
 - 4. *Put UUT onsite generation exemption on ballot*
- B. All City Staff Actions
 - 1. *Encourage all City staff to prioritize local green products when making municipal purchasing decisions*
 - 2. *Recruit all City staff to identify green product demonstration opportunities in all City facilities*
- C. East Bay Green Corridor Partnership
 - 1. *Help craft programs to increase demand for solar installation to align with City of Richmond strategy and goals*
 - 2. *Propose regional By-Product Synergy program*
 - 3. *Propose regional Spec It Green Program*
 - 4. *Promote regional standardization of energy efficiency retrofits and solar installation permitting and fees*
 - 5. *Partner with other members to enhance networking efforts*
 - 6. *Encourage other jurisdictions to raise their Utility Users Tax on electricity and natural gas*
 - 7. *Propose second hire and second purchase agreements between EBGCP members cities*
- D. Further Research
 - 1. *Study pros and cons of siting Bay Area Biosolids to Energy (BAB2E) facility in Richmond*
 - 2. *Study district energy opportunities, especially as related to the Chevron refinery*

Appendix B: Resources

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Appendix C: Richmond Green Business List

Business	Primary Address	Zip	Neighborhood	Phone	Website	Field General	Emp
SunPower Corporation	1414 Harbour Way S	94804	Marina Bay	(510) 540-0550	www.sunpowercorp.com	Renewable Energy	500
BART Richmond Repair Shop	1101 13th St	94801	Richmond Pkwy	(510) 464-6428	www.bart.gov	Transportation Services	250
Sims Metal Recycling	600 S 4th St	94804	Port	(510) 412-5300	www.simsmm.com	Recycling	114
Chevron Engineering & Technology	100 Chevron Way	94802	Point Richmond	(510) 242-4507	www.chevron.com	Renewable Energy	100
Cooper (Shaper) Lighting Inc	1141 Marina Way S	94804	Marina Bay	(510) 234-2370	www.cooperlighting.com	Green Building Materials	75
Richmond Sanitary (green divisions)	3260 Blume Dr, Suite 100	94806	Richmond Pkwy	(510) 262-7100	www.richmondsanitaryservice.com	Recycling	73
BNSF	980 Hensley St	94801	Richmond Pkwy	(510) 231-2700	www.bnsf.com	Transportation Services	65
New NGC Inc	1040 Canal Blvd	94804	Port	(510) 234-6745	www.ngc-green.com	Green Building Materials	55
AC Transit Richmond Yard	MacDonald Ave and 19th St	94804	Other	(510) 891-7147	www.actransit.org	Transportation Services	49
LSA Associates	157 Park Place	94801	Point Richmond	(510) 236-6810	www.lsa-assoc.com	Environmental Services	45
Eberline Services	2030 Wright Ave	94804	Marina Bay	(510) 235-2633	www.eberlineservices.com	Environmental Services	33
MSRC	1314 Canal Blvd	94804	Port	(510) 215-1833	www.msrc.org	Environmental Services	31
West County Waste Water Dist	2910 Hilltop Dr	94806	Richmond Pkwy	(510) 222-6700	www.wcwd.org	Environmental Services	28
Vetrazzo, LLC	1414 Harbour Way S	94804	Marina Bay	(510) 234-5550	www.vetrazzo.com	Green Building Materials	25
Heliodyne	4910 Seaport Ave	94804	Marina Bay	(510) 237-9614	www.heliodyne.com	Renewable Energy	25
Richmond Pacific Railroad	402 Wright Ave	94804	Port	(510) 307-4020	www.levinterminal.com	Transportation Services	25
F Scott Industries	912 Harbour Way S	94804	Port	(510) 233-0200	www.fscottindustries.com	Environmental Services	25
MBA Polymers Inc	500 W Ohio Ave	94804	Point Richmond	(510) 231-9031	www.mba-polymers.com	Recycling	24
SunPrint	870 Harbour Way S	94804	Marina Bay		www.sunprint.com	Renewable Energy	21
Goethermex	3260 Blume Drive, Suite 220	94806	Hilltop	(510) 527-9876	www.geothermex.com	Renewable Energy	20
Interactive Resources	117 Park Place	94801	Point Richmond	(510) 236-7435	www.intres.com	Environmental Services	20
Attarco Inc	2400 Florida Ave	94804	Cutting/Carlson	(510) 233-6666		Recycling	20
Bay City Mechanical	543 S 31st St	94804	Cutting/Carlson	(510) 233-7000	www.baycitymech.com	Construction/Landscape	18
Advanced Home Energy	4907 Central Ave	94804	Southern Gateway	(510) 540-4860	www.advancedhomeenergy.com	Construction/Landscape	17
AIM Recycling Corp	1050 Brookside Dr	94801	Richmond Pkwy	(510) 233-0440	www.aimrecycling.com	Recycling	15
Auger Corporation	229, 247B Tewksbury Ave	94801	Point Richmond	(510) 232-2728	www.fast-tek.com	Environmental Services	15
Excellent Packaging Supply	3220 Blume Dr	94806	Hilltop	(510) 243-9501	www.excellentpackaging.com	Other	13
Richmond Paratransit	2566 MacDonald Ave	94804	Other	(510) 307-8026	ci.richmond.ca.us/index.aspx?nid=88	Transportation Services	11
American Textile & Supply Company	3439 Regatta Blvd	94804	Marina Bay	(510) 236-7424	www.americantex.com	Other	10
Biagini Waste Reduction Systems	1150 Hensley St	94801	Richmond Pkwy	(510) 215-8370		Environmental Services	9
Performance Abatement Services	999 Canal Blvd, Suite B	94804	Port	(510) 236-0300		Environmental Services	9
Omega Pacific Electrical Supply	618 S 8th St	94804	Marina Bay	(510) 236-8520	www.omegapacific.com	Green Building Materials	8
Urban Farmer Store	2121 San Joaquin Street	94804	Southern Gateway	(510) 524-1604		Construction/Landscape	7
First Student Inc	436 Parr Blvd	94801	Richmond Pkwy	(510) 237-6677	www.firststudentinc.com	Transportation Services	7
SunWater Solar	865 Marina Bay Pkwy, Suite 39	94804	Marina Bay	(510) 233-0300	www.sunwatersolar.com	Renewable Energy	6
Blue Sky Shipping, LLC	904 Wright Ave	94804	Point Richmond	(415) 485-6767	www.blueskyshipping.com	Transportation Services	6
House Shining		94803	Other	(510) 410-5257		Other	6
Lawrence Construction	1 Harbour Way S	94804	Other	(510) 237-3421	www.lawrenceconstruction.biz	Construction/Landscape	6
CytoCulture	249 Tewksbury Ave	94801	Point Richmond	(510) 233-0102	www.cytotherapy.com	Environmental Services	5
Photon Energy Systems	1009 Chanslor Ave	94801	Other	(510) 912-4662		Renewable Energy	5
Real Goods Solar	5327 Jacuzzi St	94804	Southern Gateway	(415) 456-2800	www.realgoodssolar.com	Renewable Energy	4

Ecology Control Industries	255 Parr Blvd	94801	Richmond Pkwy	(510) 235-1393	www.ecologycontrol.com	Environmental Services	4
Perez Paper Recyclers	598 Spring St	94804	Cutting/Carlson	(510) 235-3660		Recycling	4
EcoTimber	5215 Central Ave	94804	Southern Gateway	(510) 809-8200	www.ecotimber.com	Green Building Materials	3
A Greener Oakland-Marin Shuttle	936 Kern St	94805	Other	(877) 687-4733	977ourgreen.com	Transportation Services	3
CalStart	1160 Brickyard Cove, Suite 101	94801	Point Richmond	(510) 307-8700	www.calstart.org	Environmental Sercies	3
Sobrante Water Treatment	5500 Amend Rd	94803	Other	(510) 223-6575		Environmental Services	2
Cook Environmental Services	3080 Hilltop Mall Rd, Suite C	94806	Hilltop	(510) 223-1290		Environmental Services	2
LC Biofuels	116 S 1st St	94804	Other	(510) 232-0416	www.lcbiofuels.com	Renewable Energy	1
Bueno Luna Landscape Design	1731 San Benito St	94804	Southern Gateway	(510) 282-4918		Contruction/Landscape	1
Litton Cycles	999 W Cutting Blvd, Suite 15	94804	Point Richmond	(510) 237-1132	classicrendezvous.com/USA/Ed_Litton.htm	Transportation Services	1
Green Flash Recycling	3701 Collins Ave	94806	Richmond Pkwy	(510) 234-4680		Recycling	1
Point Environmental	137 Park Place	94801	Point Richmond	(510) 237-1782	www.pointenvironmental.com	Environmental Sercies	1
Trillia Associates	33 Quail Hill Ln	94803	Other			Contruction/Landscape	1
Woodrow Geoscience	41 Idaho St	94801	Point Richmond	(510) 234-3107		Environmental Services	1
Rhea Moss	543 Mount St	94805	Other	(510) 236-2684		Environmental Services	1
Bingo Casino Shuttle	4128 Barrett Ave	94805	Other	(510) 233-8144		Transportation Services	1
Greenovation	460 Marina Way	94801	Other	(510) 215-1606		Environmental Services	1
Green Energy Solutions	46 Idaho St	94801	Point Richmond	(415) 710-7707		Renewable Energy	1
Environmental Technology Services	3150 Hilltop Mall Rd, Suite 70	94806	Hilltop	(510) 234-1221		Environmental Services	1
Dee Bell Architect	433 High Street	94801	Point Richmond	(650) 465-2223	deebellarchitect.com	Contruction/Landscape	1
Red Company LLC	926 36th St	94805	Other	(510) 812-5688	www.redbuildings.com	Contruction/Landscape	1
Residential Design Works	473 Mount St	94804	Other	(510) 237-9788		Contruction/Landscape	1
Conscious Construction	5122 Columbia Ave	94804	Southern Gateway	(510) 528-8123		Contruction/Landscape	1