BERKELEY ENERGY DESCENT 2009-2020:

TRANSITIONING TO THE POST CARBON ERA

FINAL REPORT

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Berkeley Oil Independence Task Force

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Introduction

The Berkeley Oil Independence Task Force ("Task Force") is a citizen advisory body tasked with the responsibility of assessing Berkeley's vulnerability to peak oil and gas and making recommendations regarding how to mitigate anticipated impacts and transition to a post-oil economy. (See Appendix A for background on Task Force members). The Task Force convened in January, 2008, pursuant to Resolution 63944 passed by the City Council on December 18, 2007.[1]

A fierce debate is taking place among petroleum geologists as to when oil production will hit its peak and then begin a permanent decline. A growing number believe we are already at peak production and that, in a year or two, the world will no longer produce enough oil to meet rising demand. The majority predict a peak somewhere between now and 2010, while a rapidly shrinking minority believe the peak will be 2020 or later. The release of the International Energy Agency's "World Energy Outlook" in November, 2008, is yet another wake-up call informing us that the day is rapidly approaching when supply can no longer keep pace with demand. The supply of natural gas too is expected to fall short of demand within ten to fifteen years.

Extreme oil market volatility during 2008 should be seen as a wake-up call: Low-income residents were hit with soaring gas and food prices, a double blow that is likely to recur when the market starts feeling the effects of announced OPEC production cuts coupled with recovery from the current recession.

Gas prices may be down for the moment, but not for long. Energy economists see price volatility as a strong signal that we are at or approaching the peak. Regardless of when exactly we hit the peak, the precautionary principle dictates that we act quickly to avert the potentially devastating consequences of an energy crisis that catches us unprepared. The risk of doing nothing (or of doing too little, too late) far outweighs the risk of acting prematurely or overly aggressively, especially in light of the many co-benefits of making a transition toward a post-carbon future.

A growing concern among industry insiders is the potential for a run-on-the-bank scenario in which spot gasoline shortages cause panicked consumers to top of their tanks. Such behavior would result in the total depletion of refined gasoline stocks within one week, leaving the trucking industry unable to transport food to cities.

[1] www.ci.berkeley.ca.us/citycouncil/2007citycouncil/packet/121807/2007-12-18%20Item%2026%20Support%20of%20%20"Oil%20Independent%20Berkeley".pdf

Two federal government reports on peak oil (in 2005 and 2007)[2] have urged the government to undertake a crash mobilization twenty years ahead of time. The International Energy Agency echoed this clarion call with the release of its pessimistic "World Energy Outlook" in November, 2008. As with climate change, the federal response to these reports has been close to nil, prompting local governments to launch their own peak oil preparedness programs. Peak oil task forces are active in dozens of U.S. cities, including Oakland, San Francisco, Portland, Denver, Bloomington, Austin and Sebastopol. Most of these task forces are official government entities, not citizen advisory groups. (The Oakland Task Force Report was completed in December, 2007.[3] The San Francisco report is expected sometime this spring). Perusing the reports issued by various task forces around the country, a few common themes emerge—(1) Peak oil has the potential to wreak havoc on economic and agricultural systems; (2) in light of federal and state inaction, it is incumbent upon local government to avoid and mitigate the consequences of an energy crisis; (3) the need for bold, creative thinking and leadership is manifest; and (4) there is very little time to act.

Although local governments do not have unlimited power and resources, careful planning will allow them to buffer their residents from the most catastrophic impacts. At the same time, individuals, businesses, and community-based organizations have important roles to play in building local resilience—from reducing personal oil consumption to patronizing local, green businesses to building neighborhood support networks that will help vulnerable residents weather the coming storm, we all have to commit to weaning ourselves from lifestyles that are dependent on large amounts of fossil fuels.

Over the course of the past year, the Task Force has analyzed how energy shortages and price spikes could affect Berkeley residents' access to **food, water, health care, and transportation**. This analysis was completed in two stages: (1) Fact gathering: Task Force members consulted with dozens of individuals employed by government agencies, public utilities, the school district, area farms, the Berkeley Ecology Center and other NGOs, community gardens, health care providers, and businesses. The Task Force also collaborated with the San Francisco Peak Oil Preparedness Task Force and reviewed the report of the Oakland Oil Independence by 2020 Task Force; (2) Public stakeholder consultations: The Task Force presented its findings to the public at a forum at the Ecology Center on January 8, 2009**.** Citizens who attended the January forum supported the overall goals and specific recommendations set forth in the report, with one attendee recommending that the City hire farmers to cultivate edible urban gardens and another expressing concern about lead contamination of Berkeley soil.

Two individuals submitted written comments—Timothy Burroughs, Berkeley's Climate Action Coordinator and Damian Bickett, a PhD candidate at UC Berkeley's School of Agricultural and Resource Economics. The Task Force worked to incorporate many of Burroughs' suggestions in the final draft. Bickett's comments which, for the most part, take issue with the notion of oil depletion and the effects of rising energy prices, can be accessed on the Oil Independent Berkeley website, as can Burroughs'.

[2] GAO report at www.gao.gov/new.items/d07283.pdf; DOE report at www.netl.doe.gov/publications/others/pdf/Oil_Peaking_NETL.pdf

[3] http://www.oaklandnet.com/Oil/.

Task Force Recommendations

Each chapter of this report contains a number of recommendations for actions the City can and should take to avoid and mitigate the worst potential impacts. In assessing how vigorous the City's mitigation efforts should be, we urge the City to adhere to the precautionary principle and err on the side of over-preparedness.

On the next page, we set forth condensed versions of selected recommendations that we believe are either readily achievable in the short term or that could be difficult and more protracted but are, nonetheless, absolutely essential. Additional recommendations are set forth in the body of the report. As we enter our energy descent, other individuals and groups are likely to put forward additional recommendations, and we urge the City to continue to consider new ideas that respond to an evolving set of circumstances.

While some of the recommendations contained in this report are cost-neutral, many call for substantial expenditures on programs that will mitigate peak oil impacts. New fees and taxes, while unpopular, may be necessary to generate revenue for these vital programs. As the City undertakes the process of determining what climate action programs it will allocate money to, the Task Force recommends that it prioritize programs that accomplish the dual purpose of reducing carbon emissions and preparing for oil depletion. Many of these programs will also yield important public health co-benefits—as we move toward fresh, organic food, reduce traffic congestion/emissions and get ourselves around on bike and foot, we can expect positive health outcomes that, in turn, save the City and state money in health care costs.

FOOD

Short term goals

- Procure local food for all Berkeley day camps, the Tuolumne Family Camp, the jail and other recreational, educational and social service programs that serve food.
- Educate local grocers about the importance of selling organic produce from nearby farms and request that they label food origins.
- Add homesteading classes to the curriculum at the Berkeley Adult School.
- Make homesteading supplies available through the tool lending library.
- Encourage residents to plant edible gardens in lieu of lawns and ornamental landscaping.
- Increase funding for urban garden programs.
- Direct city departments to develop an emergency local food procurement contingency plan if traditional supply lines are disrupted.

Longer term strategies

- Appoint a Berkeley Food Security Manager to oversee all of the recommendations herein and to develop and implement a long-range food security plan in collaboration with the Alameda County Ag Commission.
- Set local food production targets.
- Identify and preserve open space fields that may be suitable for edible gardening.
- Consider the use of tax incentives to encourage institutions to procure locally.
- Negotiate a joint urban garden project with EBMUD, UC Berkeley, BART and/or East Bay Regional Parks for open space areas in Strawberry Canyon, Wildcat Canyon, Tilden Park, Claremont Canyon and the Ohlone Greenway.
- Provide incentives for San Francisco's "MyFarm" backyard-CSA to expand to Berkeley.
- Organize a Heifer Berkeley program based on Heifer International, the program through which citizens of wealthier nations buy farm animals for people in developing nations.
- Maintain a light industrial zone and encourage vegetable and fruit canners, grain millers, cereal and dairy product makers to site there through tax incentives and zoning preferences

WATER

Short term goals

- Evaluate whether certain grassy fields should be replanted with drought-resistant landscaping (City and BUSD)
- Ensure prompt repair of leaky fountains (City and BUSD)
- Educate the food service industry about alternatives to its highly inefficient machinery.
- Educate residents about EBMUD rebates for low-flow toilets and water-efficient washing machines and dishwashers.
- Teach residents how to irrigate appropriately, how to read their meter and how to install real-time meters.
- Direct the Parks Division to revise its urban forestry plan to emphasize drought-resistant native plants and trees.
- Require dual-flush toilets and pex piping at point of sale.
- Finance native replanting program with open space fee on new development.
- Ask gyms to stop providing free towels.

Longer term strategies

- Replace toilets with dual-flush models (City and BUSD)
- Maximize use of recycled water in the “purple pipe.”
- Purchase rainwater catchment devices.
- Streamline permit process and provide technical assistance to residents who wish to install greywater systems.

TRANSPORTATION AND OIL CONSERVATION

Short term goals

- Encourage Berkeley businesses to hire Berkeley residents, and study residents' job readiness for local employers' needs.
- Continue providing city employees with EcoPasses and encourage private employers to do the same.
- Do not provide free parking to city employees who don't have to drive to work.
- Encourage city employees to utilize city-provided bikes for conducting city business
- Revise the residential parking permit fee structure so that households with multiple and/or gas-guzzling vehicles pay more.
- Prioritize bike lanes for resurfacing projects.
- Provide more bike parking, especially in the areas of Telegraph Avenue, 4th Street/Amtrak station, all BART stations, and downtown.
- Leave decommissioned parking meters in place as extra bike parking.
- Initiate a "Bike-to-Work/School on Fridays" program to encourage maximum ridership one day per week.
- Require city departments with vehicle fleets to dispatch the most fuel-efficient vehicle possible on any given trip.
- Attend CA Energy Commission energy emergency planning seminars.

Longer term strategies

- Design a "smart parking" program.
- Incentivize high-density, car-free development, especially along transit corridors.
- Fund the downtown Berkeley bike station.
- Bring a public bike rental program to Berkeley, with rental stations located at all BART stations and major bus stops.
- Provide separated bike lanes on streets currently designated as bike routes.
- Institute a Transportation Services fee to raise revenue for alternative transportation programs (as recommended in the Climate Action Plan).
- Push AC Transit toward electrified buses and free ride zones.
- Replace city's vehicle fleet with plug-in electric vehicles as they become available.
- Increase volume of City's petroleum reserve.

HEALTH CARE

Short term goals

- Urge CHO to undertake a sustainability initiative in partnership with Health Care Without Harm or another organization.
- Urge Alta Bates to participate in a farm-to-hospital program that will provide healthy, local food to its patients.
- Urge Alta Bates to install a rooftop solar system.

Longer term strategies

- Expand all public health programs that focus on disease prevention, nutrition and family planning.
- Facilitate the growth of the alternative medicine sector by ensuring their access to affordable office space and incentivizing the purchasing of locally-grown medicinal herbs.
- Replace portion of ambulance and paratransit vehicle fleet with electric models as available.

OTHER GOALS

- Initiate formation of Bay Area Energy Descent Council to oversee ongoing, coordinated planning.
- Educate local businesses about energy predicament.
- Train city employees and officials in local economic investment models.
- Give teeth to Green Corridor and “Buy Local” initiatives.
- Aggressively pursue federal stimulus funds that can be used to initiate creative approaches to developing our local economic resilience.

Other issues

The Task Force did not analyze in depth the potential impacts of peak oil and gas on electrical power generation, communications (phones, radio, TV, internet), social services, garbage collection, public schools or UC Berkeley. We do note that the city's garbage and recycling trucks and the school district's buses run on B20 bio-diesel. Switching to locally-produced B100 made from recycled vegetable oil would be prudent.

With respect to waste disposal, we encourage the City to identify a green waste composting site closer to Berkeley to reduce transport costs. As for electricity, the Task Force commends the Berkeley FIRST solar initiative and calls for expansion of the weatherization and other energy-efficiency programs for low-income households. In addition, we strongly endorse the proposal for Berkeley to participate in a Community Choice Aggregation (CCA) that would move aggressively toward renewable energy sources. At the same time, it is critical that public schools and other buildings implement maximum energy-efficiency retrofits to cushion themselves against spikes in the price of natural gas. UC Berkeley's Campus Sustainability Assessment outlines a number of energy-saving initiatives that the university would be wise to implement as soon as possible. It would be fruitful if the City and UCB made a concerted effort to cross-pollinate the ideas contained in their respective sustainability/climate change plans.

Finally, the Task Force endorses the recommendation set forth in the Climate Action Plan concerning the implementation of a carbon tax on consumption of electricity and natural gas, with exemptions for low-income households. (Participation in a CCA would increase the feasibility of implementing such a tax). The revenue generated by this tax would help offset the costs of implementing many of the recommendations set forth in this report and in the Climate Action Plan.

The need for bold leadership

On the basis of the information and opinions that were shared with us, the Task Force now presents the City of Berkeley with a set of policy recommendations that we believe will best prepare the City to withstand the looming energy crisis. As we submit this report, we are mindful of the many reports that get produced and shelved. We wish to communicate our most earnest plea that this report not meet the same fate. Peak oil impacts are likely to unfold just as climate change begins to seriously destabilize our environment, creating a perfect storm that will test the cohesion, creativity and integrity of our community and its leaders like never before.

The biggest risk in planning for these twin crises is the classic "too little, too late" scenario, in which authorities are unwilling to enact major changes today to prepare for anticipated problems that will hit when they are no longer in office. The health and, perhaps even—the survival—of our community rests in the hands of leaders who have the strength and tenacity to act swiftly and boldly. We trust that, if any City can accomplish this (and many around the world are trying), it is Berkeley.

1. FOOD SECURITY

Beneath the cornucopia of foods available at every grocery store, a disturbing truth looms—our food supply, enabled by cheap fossil fuels, is not secure. The prospect of diminishing supplies of fossil fuels coupled with climate instability could be nothing short of catastrophic for the modern industrial agricultural system. Situated close to one of the most productive food-growing regions in the world, Berkeley has the opportunity to fare relatively well if it begins now to develop a robust, resilient regional foodshed.

The Good News:

- Berkeley has three farmers' markets where 120 vendors sell produce and value-added products to 10,000 customers per week.
- The Ecology Center, which runs the Farmers Markets, maintains a seed bank of heirloom and Bay Area-adapted seeds.
- Hundreds of residents subscribe to Community Supported Agriculture programs (CSAs) and receive a box of produce directly from a nearby farm.
- In San Francisco, a startup called MyFarm harvests produce from backyard gardens and sells it to CSA customers in that same neighborhood, thereby keeping the food miles travelled to a minimum. MyFarm may expand into the East Bay in the future.

Berkeley Farmer's Market

Nonetheless, we are still highly dependent on cheap fossil fuels.

The vast majority of food consumed by Berkeley residents travels an average 1500 miles from farm to plate. California exports 50% of what it produces and imports close to 47% of what its residents consume. Though some local foods are displayed on supermarket shelves, they represent a very small fraction of total stock.

The Berkeley Unified School District provides 8300 meals a day—30% of the produce they serve is sourced locally, the rest from the west coast corridor. BUSD buys processed foods from distributors all over the country.

Although our climate is conducive to year-round production, our food supply is extremely dependent on fossil fuels—not only for transporting food to markets, but also to pump water to farms, to manufacture fertilizers and pesticides, and to package it all. Even organically grown food—less than 5% of the total production—is dependent on fossil fuels for production, transportation, processing and packaging. When Cuba lost access to Soviet oil in the early 1990s, a severe food crisis ensued during which the average Cuban lost twenty pounds, and starvation was avoided only through the implementation of strict rationing.

As the worldwide supply of oil and natural gas declines, prices of fuel, fertilizer, electricity, natural gas, and water will soar. As farm inputs rise in cost, that increase is passed on to consumers—food prices for the first half of 2008 (when oil hit $147 a barrel) were up 6.8%, almost triple the average annual percent increase for the last 15 years. Prices for staples such as bread and milk are up as much as 23% over last year. The U.S. Department of Agriculture predicts continuing food inflation for the next year. At the same time, the federal food stamp benefit remains at three dollars a day, ensuring worsening malnutrition for food stamp recipients. According to a 2007 UCLA study, 36% of Alameda County residents are "food insecure," a figure that is certain to rise.

Additional stresses on modern industrial agriculture

As oil prices increase, farmers are growing corn for biofuel production, decreasing the supply of wheat and other grains, thus increasing grain prices across the board. Various countries all over the world are seeing food riots due to high grain prices and shortages; recently rice has been rationed here in the Bay Area. Meanwhile, the world population continues to grow far beyond the Earth's carrying capacity, straining the outer limits of the global food production system.

Farm yields have been declining in recent years due to degraded topsoil, pests, and loss of agricultural land. Natural gas is the main ingredient in chemical fertilizers, the use of which erodes and degrades topsoil. A vicious cycle is thus created since every year, it takes more fertilizer to produce the same yield. The practice of monocropping has meant the loss of pollinator species, which has increased the problem of pests and the demand for chemical pesticides. Meanwhile, agricultural land is being lost to development every year in the central valley, and small family farms are going under at the rate of one every half hour.

According to the Union of Concerned Scientists, among others, climate change will have a significant impact on agriculture. Higher temperatures, less water, more severe storms, saltwater intrusion, and more runoff from precipitation falling as rain instead of snow are some of the expected changes that will be difficult for the agriculture industry to weather.

Avoiding the worst case scenario and planning ahead for higher oil and gas prices in the future means relocalizing our agriculture and restoring local sovereignty over all aspects of food production and retail. Local food means lower carbon dioxide emissions, less impact on the environment and more food security for our citizens. Community control over production and retail will also insulate residents against price gouging, unfair labor practices and overstocking of unhealthy convenience foods. Indeed, relocalizing our food production is one of the most health-promoting policies we as a region can undertake—it will mean an abundance of healthy, affordable food with a minimum of carbon emissions.

REGIONAL FOODSHED CAPACITY

Within city limits, there are 384 acres of open space, enough to feed 750 of Berkeley's 100,000 residents if every square inch were planted.

The American Farmland Trust and the Sage Center recently completed a yearlong feasibility study for a San Francisco foodshed extending approximately 100 miles north, south and east. They concluded that 20 million tons of food are produced annually within this foodshed and that

the Bay Area consumes 6.4 million tons. According to the report, the biggest threat to the stability of this precious foodshed is the loss of farmland to urban development which, at current rates, would destroy as much as 800,000 acres by 2050.

BYA Community Garden

Consistent with the findings of the foodshed study, Oakland's 2006 Food Systems Assessment (a joint venture of the Mayor's Office for Sustainability and UC Berkeley), demonstrates that Oakland residents can obtain 30% of their food from within 300 miles. (The assessment was undertaken pursuant to a resolution calling for the mayor to develop a plan for 30% local food production). The City of Oakland has appropriated $50,000 toward the establishment of the Oakland Food Policy Council which will implement the recommendations in the Food Systems Assessment. Bay Area counties moving aggressively toward local food procurement include San Mateo County, San Francisco, Marin and Contra Costa, as are the city of San Jose, UC Berkeley and UC Santa Cruz.

Despite the blessing of local abundance, direct farm-to-consumer sales account for less than one percent of total agricultural sales. The Green Purchasing Institute of Berkeley has partnered with San Francisco, Contra Costa, Marin, San Mateo, and San Jose to develop strategies for increasing local governments' procurement of locally-grown food. These partnerships provide a model for the City of Berkeley to emulate.

Gaps in our local foodshed

Some of the staples that are *not* currently grown *but could be* given our climate are:

- oats
- tea
- dry legumes

The following foods are produced regionally but not in sufficient quantities to meet Bay Area residents' dietary requirements:

- eggs
- pork
- wheat
- potatoes
- corn

There are *no* regional producers of:

- cooking oil (except for olive)
- corn meal
- baking soda/powder
- animal feed
- yeast

The following foods *probably cannot* be grown in our region:

- peanuts
- chocolate
- sugar
- vanilla
- tropical fruits
- maple syrup
- coffee (an important staple!)

Although a number of specialty food businesses exist in Berkeley (micro-breweries, confectioners, bakeries, coffee roasters), there are no processors of food staples with the exception of Tofu-Yu. The demise of the food processing industry is probably due to high labor and overhead costs in Berkeley.

RECOMMENDATIONS FOR THE CITY OF BERKELEY

1. Appoint a Berkeley Food Security Manager to oversee all of the recommendations below and to develop and implement a long-range food security plan in collaboration with the Alameda County Ag Commission.
2. Direct the Office of Economic Development to make local food production a top priority and to set local food sourcing and production targets. (Berkeley Unified School District's successful transition toward local sources provides a working model for how to implement and track such a program). "Local" food can be defined as food that originates within a 100-mile radius of Berkeley (the definition used in the San Francisco Foodshed Assessment) or can be broadened to 200 miles to include most of the Central Valley.
3. Implementation of farm-to-institution programs was the most frequently asserted suggestion of the stakeholders we consulted and a key recommendation set forth in the San Francisco Foodshed Assessment. Such programs incentivize local production by ensuring growers a stable market at a fair price. The City can encourage institutions such as Alta Bates, Bayer, the school district and restaurants to buy directly from nearby farms. The City can further encourage institutions to procure locally through the use of tax incentives and may wish to partner with the Green Purchasing Institute to develop local food procurement policies.
4. Procure local food for all Berkeley day camps, the Tuolumne Family Camp, the jail and other recreational, educational and social service programs that serve food. (We understand that moves in this direction are underway).
5. Require that all city-sponsored special events, conferences, meetings, and other catered events source at least 25% of the produce from local farms. Additionally add a local

purchasing commitment in permitting applications for special events on public lands such as parks, community centers and other publicly owned venues.

6. Support efforts of the California Alliance with Family Farms to educate local grocers about the importance of selling organic produce from nearby farms.
7. Request that grocers label food origins and track the number of local products they carry.
8. Encourage supermarkets to implement "local loan producer programs" (as Whole Foods does) that support local small food production businesses.
9. Direct city departments to develop an emergency local food procurement contingency plan if traditional supply lines are disrupted. Direct local planners to develop plans for building local food reserves, as recommended by the American Planning Association.
10. Ensure proper maintenance of the portable toilets at the Farmers Markets, including hand-washing facilities.
11. Develop a plan for transitioning open space ball fields, public lawns, and median strips to fruit tree planting and vegetable cultivation
12. Maintain a public list of vacant lots available for cultivation so that community-based organizations can plant edible gardens before and during the permitting process for redevelopment of the lot. For property owners who have no plans to develop their parcels, the City should pursue creating special agricultural conservation easements.
13. Review zoning regulations to ensure that non-profit or commercial agricultural enterprises can cultivate in residential and mixed-use areas.
14. Increase funding for urban garden programs. Revenue for such programs can be raised by imposing an open space fee on new development and/or increasing the parks tax on property owners with buildings valued over $500,000. Use a portion of these funds to hire gardeners to cultivate private yards (see No. 18 below).
15. Negotiate a joint urban garden project with EBMUD, UC Berkeley and/or East Bay Regional Parks for open space areas in Strawberry Canyon, Wildcat Canyon, Tilden Park, and Claremont Canyon.
16. As part of the Green Corridor project, transform the Ohlone Greenway into a Victory Garden where food is grown by and for West Berkeley, Albany, El Cerrito and Richmond residents.
17. Encourage residents to plant edible gardens in lieu of lawns and ornamental landscaping. (Even a 9-square foot bed can produce 20 pounds of produce in a year). Assessing a tax based on square footage of lawn would discourage wasteful use of yard space. Also, the City could offer free removal of paved surfaces such as driveways to residents who commit to planting edible gardens.
18. Invite residents to voluntarily donate their yard space to city-sponsored or independent urban gardeners in exchange for a share of the produce harvested there.
19. Provide incentives for MyFarm, the San Francisco backyard-CSA company, to expand its operations to Berkeley, or support a similar urban CSA startup whose business plan focuses on Berkeley.
20. Work with the UC Master Gardeners program to provide free and low-cost classes and workshops in Berkeley.
21. Initiate a pilot half-road closure project in collaboration with a neighborhood that supports the idea. Remove street surfacing along one side of street, allowing bike traffic or one-way auto traffic on other side and remediating soil underneath former roadway so as to allow for vegetable gardening.

22. Encourage neighborhood associations to form group bulk purchasing consortiums so that the neighborhood acts as an entity that procures food directly from organic farms.
23. Use the grassy area surrounding City Hall as a demonstration site for an edible Victory Garden (as was done in front of San Francisco's City Hall and the White House). (Pursue partnership with the Merritt College Horticulture Department to implement this proposal).
24. Plant all median strips with fruit trees. Organize a volunteer gleaning program and/or work with public and private school students to harvest and distribute fruit.
25. Buy a farm. The City should work with the California Farmland Conservancy Program to identify available parcels of rural land that can be developed into a Berkeley Family Farm. This farm can operate as a camp along the lines of the Tuolumne Family Camp.
26. Organize a Heifer Berkeley program based on Heifer International, the program through which citizens of wealthier nations buy farm animals for people in developing nations. In Berkeley, wealthier residents could subsidize the purchase of backyard chickens and goats and, if desired, claim a share of the egg and milk production.
27. Add homesteading classes to the curriculum at the Berkeley Adult School (seasonal cooking, yogurt and cheesemaking, canning and preserving, gardening, seed saving, greywater design, beekeeping, backyard chickens, herbal medicine, nutrition).
28. Make homesteading supplies (pressure canners, sewing machines, cheese presses, grain mills, chicken brooding equipment, etc.) available through the tool lending library.
29. Maintain a light industrial zone and encourage vegetable and fruit canners, grain millers, cereal and dairy product makers to site there through tax incentives and zoning preferences.

RECOMMENDATION FOR THE BERKELEY UNIFIED SCHOOL DISTRICT

1. Collaborate with other Bay Area school districts to aggregate their food purchases so as to receive the bulk purchasing discount from local organic growers. The district should also seek out a distributor who will agree to provide packaged and processed foods from local sources.
2. Expand school gardens, removing asphalt playground areas if necessary, and consume food grown on site.
3. Move away from single-serving snacks and drinks, packaged foods, and disposable utensils and plates. (We understand this trend is already underway and applaud it).
4. Develop a practical skills curriculum for the middle and high schools (sewing, carpentry (without power tools), seasonal cooking, gardening, seed saving, food preserving, cheesemaking, herbal medicine, beekeeping, nutrition).

The Task Force consulted with the following individuals and organizations in the preparation of this chapter:

Professor Miguel Altieri, UC Berkeley

Dennis Bray, Alameda County Ag Commissioner

Jessie Bell, California Food and Justice Coalition

Timothy Burroughs, Climate Action Coordinator

Jennifer Cogley, Office of Economic Development

Neal DeSnoo, Office of Energy and Sustainable Development

Ben Feldman, Berkeley Farmers Markets

Dave Fogarty, Berkeley Office of Economic Development

John Hawkridge, Peralta Community Garden

Judith Redmond, Full Belly Farms, Guinda

Temra Costa, California Alliance with Family Farmers, Oakland

California Food Justice Coalition, Oakland

Daniel Miller, Spiral Garden, Berkeley

Paul Muller, Full Belly Farms, Guinda

Angela Moltrum, Lundberg Farms (California rice grower)

Cynthia Cruise, Clover Farms (California dairy producers)

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David Craib, Buyer, Berkeley Bowl

Brett Witmer, Buyer, Whole Foods, Berkeley

Nick Heustis, Marketing, Whole Foods, Berkeley

Ann Cooper, Director, Nutrition Services, Berkeley Unified School District

May, 2008 San Francisco Food System Design Charrette

November, 2008 Bay Area Local Food Forum

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2. THE OIL IN OUR WATER

Peak oil may impact wastewater treatment and water delivery to Berkeley residents, as 19% of California's electricity plus 88 million gallons of diesel a year go to pumping, moving and treating water. Fortunately, EBMUD relies largely on gravity-fed systems and its own bio-gas power generation. Nonetheless, EBMUD is still dependent on fossil fuels to deliver water and treat wastewater. The need for water conservation and minimization of wastewater is enormous and the opportunities great. The Task Force urges the City to move boldly toward strict conservation measures that match or exceed EBMUD's targets.

The City of Berkeley's water supply system is part of a regional water supply and a sub-regional wastewater system under the East Bay Municipal Utilities District (EBMUD). The Task Force has examined EBMUD's current water supply system and future projected water demands and supply. Where possible, we include data on the fossil fuel energy currently used to deliver water to consumers.

EBMUD'S WATER DELIVERY STRUCTURE

EBMUD's Mokelumne River supply structures consist of the Pardee Dam and Reservoir, the Camanche Dam and Reservoir, and approximately 90 miles of aqueduct systems. The Pardee Dam and Reservoir are located near the town of Jackson approximately 38 miles northeast of Stockton. The 23.6 megawatt Pardee Powerhouse at the dam can generate 140 million kilowatt hours of electrical energy during average runoff years. The Camanche Dam is located approximately 10 miles downstream from the Pardee Dam. It has a 10.8 megawatt power plant that can generate 40 million kilowatt hours of electrical energy during average runoff years. The Mokelumne Aqueducts are comprised of three steel pipelines that transport water about 81 miles from the Pardee Tunnel at Campo Seco to Walnut Creek at the east end of two Lafayette Aqueducts. These two aqueducts continue 7 miles to Orinda. These steel pipelines have the capacity to carry a total of 200 million gallons per day by gravity flow and up to 325 million gallons per day by pumping at the Walnut Creek pumping plants. Figure 2-1 on the next page shows EBMUD's water distribution system.

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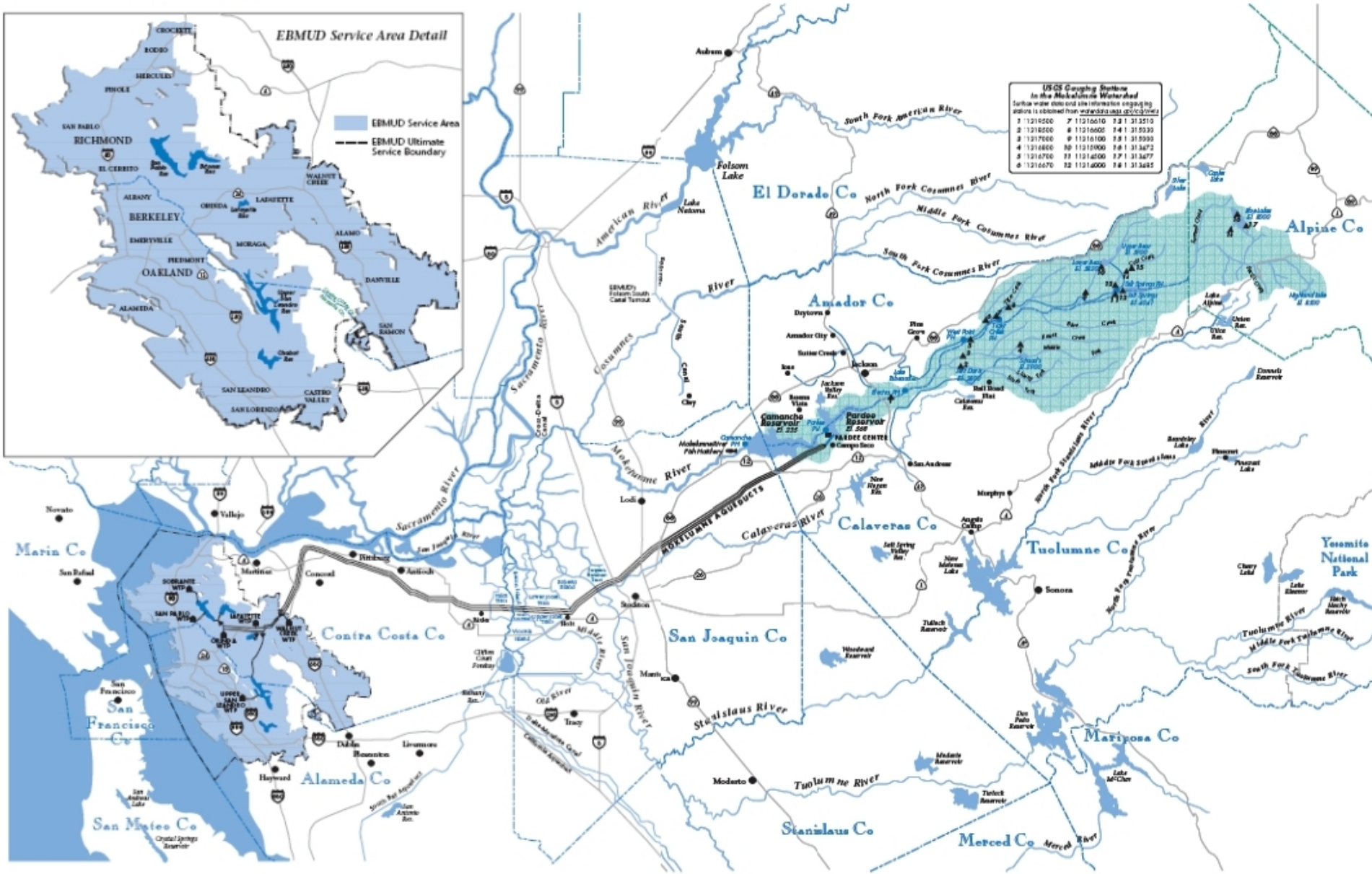
Figure 2-1. EBMUD Water Supply System



LOCAL RUNOFF

Local runoff in Berkeley's watershed is dependent on hydrologic conditions and storage capacity. According to the EBMUD's 2005 Urban Water Management Plan (UWMP), in dry years, evaporation can exceed local runoff resulting in no net supply. During normal years, the average local supply that can be used for beneficial use is 15-25 million gallons per day. Local runoff is not a significant source of water for Berkeley, and tapping it would damage the ecological systems within Berkeley's watershed.

CLIMATE CHANGE

The Union of Concerned Scientists put out a report in 2006 predicting a 70-90% reduction of the Sierra snowpack by century's end which, in turn, would mean a 30% reduction in spring stream flows. They also note that rising sea levels could cause saltwater inundation of aquifers and groundwater, including the aquifer that conveys EBMUD water.

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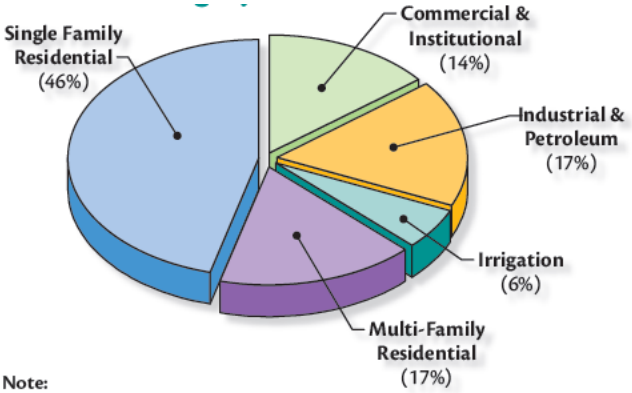
Water Supply and Demand

Distribution of Water Use by Customer Category

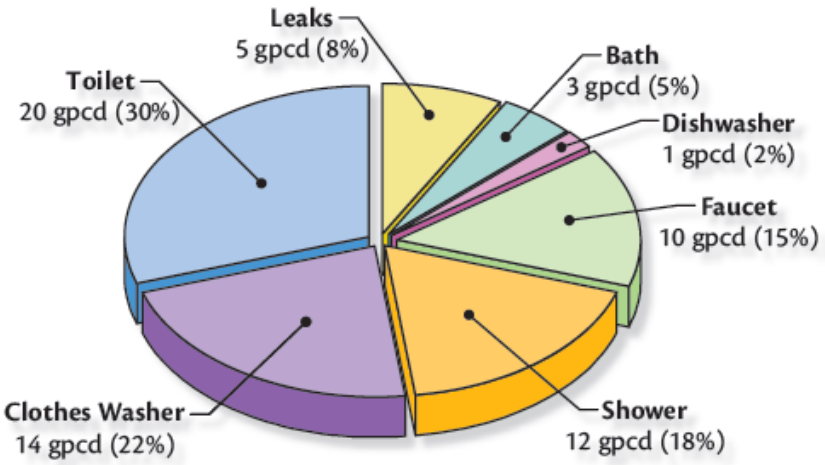
According to the EBMUD, 63% of water distribution is for residential use, 17% water is for industrial use, 14% is commercial and institutional, and 6% is used for irrigation.



Note:
Based on CY 1975-2004 metered historical consumption data.

Single-Family Residential Indoor Use

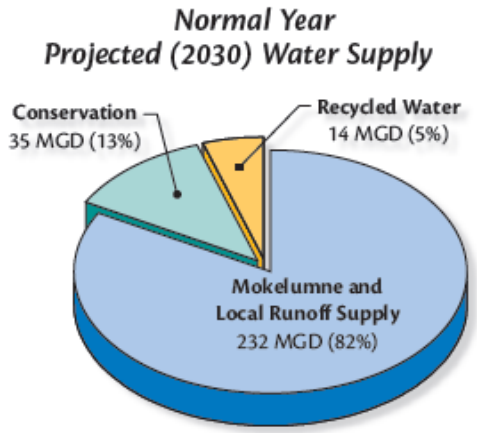
Single family residential per capita water use broken down by inside use shows 30% usage for toilets, 22% usage for clothes washer, 23% for showers and baths, 15% for faucet, 8% for leaks, and 2% for dishwashers.

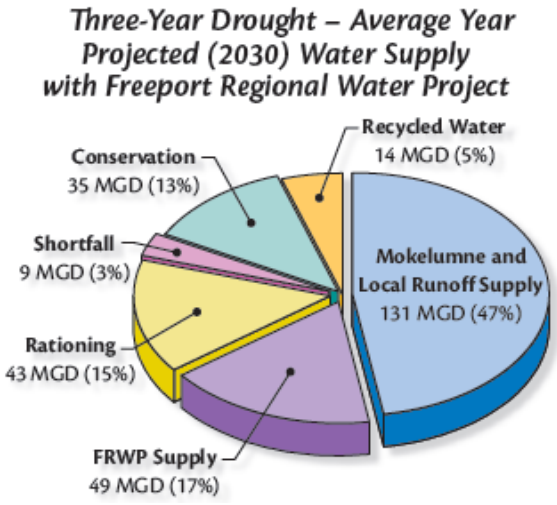


Inside Use Category	Gallons/Capita/Day	Percent
Leaks	5	8
Bath	3	5
Dishwasher	1	2
Faucet	10	15
Shower	12	18
Clothes Washer	14	22
Toilet	20	30
Total	**65**	**100**

Note:
Based on CY 2004 consumption data.

Projected Water Supply





Normal year projected water supply source for the year 2030 show that 82% of water supply will be provided by the Mokelumne and runoff in EBMUD's service area, 13% from conservation and 5% from recycled water. During a three year drought, only 47% of supply will come from Mokelumne and local runoff. 17% is expected to come from the Freeport Regional Water Project and 28% is expected to come from rationing and conservation.

During some historical dry periods, runoff from the Mokelumne River Basin has been insufficient to meet service area demands. The drought-prone nature of our region, coupled with the threat of climate change and the potential scarcity of the fossil fuels needed to deliver water, call for the swift implementation of strong conservation measures.

WASTEWATER

East Bay Municipal Utilities District (EBMUD) wastewater service district (known as Special District No. 1, or SD-1) is a separate wastewater district within EBMUD's water service district. SD-1 treats domestic, commercial and industrial wastewater for Alameda, Albany, Berkeley, Emeryville, Oakland, Piedmont, and for the Stege sanitary district, which includes El Cerrito, Kensington, and parts of Richmond. Each of these communities operates sewer collection systems which discharge into one of five EBMUD sewer interceptors.

The District's collection facilities are comprised of the interceptor system and the collection system pumping stations. The interceptors consist of 29 miles of reinforced concrete pipes ranging in size from 12 inches to 9 feet in diameter. They collect

wastewater from approximately 1,400 miles of sewers owned and operated by the communities in the SD-1 service area. The District operates fifteen collection system pumping stations, which lift wastewater through the interceptors as it travels to the Wastewater Treatment Plant. The one pumping station within the Berkeley city limits is near the Berkeley marina.

Primary wastewater treatment removes floating material, oils and greases, sand and silt and organic solids heavy enough to settle in water. Secondary treatment biologically removes most of the suspended and dissolved chemical impurities that would rob life-giving oxygen from the waters of the Bay if allowed to decompose naturally.

Treatment involves a series of steps which screen, filter, clarify, and compost the waste. Chemicals used in this process are sodium hypochlorite, a concentrated form of bleach, and sodium bisulfite, which removes chlorine. The treated effluent is disinfected, dechlorinated and discharged one mile off the East Bay shore through a deep-water outfall into San Francisco Bay.

None of the chemicals used in wastewater treatment are petroleum-based; their manufacture, however, does require petroleum or other fossil fuels. Due to recent price increases for wastewater treatment chemicals, EBMUD is looking into the use of ultraviolet (UV) disinfectant. EBMUD also anticipates that they may not be able to get delivery of these chemicals in the case of a catastrophic event.

RECYCLED WATER

Tertiary treated water can be recycled. The District provided more than 8 MGD of recycled water in 2004 for non-residential landscape irrigation and industrial uses, including reuse at its main wastewater treatment plant. The District's goal is to recycle 14 MGD (15,680 acre-fee per year) by 2020. A "purple pipe" up University Avenue provides access to recycled water.

ENERGY USE

EBMUD generates 90% of their power onsite using biogas turbines from the biogas recaptured onsite. This power is used to transport both potable and waste water. The remaining 10% they purchase from Western Area Power Generation (hydroelectric). EBMUD is currently installing two additional gas turbines which will run off the recaptured biogas and will be able to produce more than they need. EBMUD anticipates completing the turbine installation by early 2010 and plans to sell excess energy produced to PG&E.

WATER CONSERVATION INNOVATIONS

Greywater: A greywater system diverts water from washing machines, showers and/or sinks to the garden rather than draining into the sewer. Many homeowners and landscapers, however, complain that the permit process is unduly burdensome.

Anecdotal evidence suggests a high degree of non-compliance with local greywater regulations, creating potential public health hazards.

Rainwater catchments: The basic idea of these systems is to capture 100% of rainwater and either store it for irrigation during the dry season or send the water back into the ground as opposed to letting it run off down the street, into the sewers and into the Bay.

Several demonstration sites in Los Angeles show how rainwater catchments can serve the dual purpose of stormwater management and water conservation. The systems have successfully reduced run-off and flooding, recharged groundwater, saved energy, improved air and water quality and captured carbon. These catchment systems take several forms, including underground cisterns, swales, landscaping that is designed to hold water ("retention grading"), strategic tree planting, and driveway grates. The demonstration sites are a collaboration of the non-profit TREES and the LA Department of Water and Power, the City of Santa Monica, LA Department of Public Works and other government entities. The cost-benefit analysis of these test sites shows it is cost-effective to develop these "urban watersheds". According to the report *Tapping the Potential of Urban Rooftops: Rooftop Resources Neighborhood Assessment*, by Bay Localize, the average rooftop in their study area in Oakland could capture 3000 gallons/year.

Pex Piping: The California Energy Commission recently approved the use of Pex pipes in residential buildings. Pex piping significantly speeds the rate of hot water delivery, meaning less water wasted while waiting for it to reach the desired temperature.

Composting Toilets: Toilets constitute the largest indoor use of water for residents. It seems that the City has had some interest in supporting composting toilets in the recent past (i.e. the Gaia Building), but has been limited by state regulation. The reasonable concerns about public safety, installation, maintenance, and disposal have been addressed by other states. As with greywater systems, composting toilets for residences can be regulated in ways to ensure that public health is not compromised. There are easy and established ways to regulate and outsource all the maintenance and disposal with the same companies that install the toilets.

Conservation Rebates: The City of Santa Monica offers rebates to residents for disconnecting downspouts ($40), installing rain barrels ($100) and large cisterns ($500). They also offer grants of up to $20,000 for water-efficient landscaping (climate-appropriate vegetation and low-volume irrigation) for a total of $160,000 a year.

RECOMMENDATIONS

EBMUD RECOMMENDATIONS

EBMUD has several suggestions as to how the City of Berkeley can reduce its water usage:

(1) The City's commitment to reduced watering and more efficient irrigation are steps in the right direction. In addition, the City should evaluate whether certain grassy fields should be replanted with **drought-resistant landscaping**.
(2) Ensure prompt **retrofitting/repairing of leaky water fountains**.
(2) Teach residents to **irrigate appropriately** (at 80% evapotransporation--in other words, just enough to keep their plants healthy).
(3) **Educate the food service industry** about alternatives to its highly inefficient machinery, including cooling towers, dip wells, water-cooled (vs. air-cooled) ice machines and boiler-based (vs. boilerless) steamers. (PG&E offers a rebate of $750 per steamer, but most business owners don't know about it).
(4) **Public education:** 30% of residences have leaks of anywhere from a few gallons to 4000 gallons a day. Residents should be urged to promptly fix leaks and also be directed to EBMUD rebates for low-flow toilets and water-efficient washing machines and dishwashers.
(5) Teach residents how to read their meter and how to install **real-time meters**. EBMUD is doing a pilot program in San Ramon with real-time meters and hopes to replace all 400,000 meters in the near future. (Most people think their household uses about 50 gallons/day but actual household use averages 290 gallons/day in Oakland and Berkeley).
(6) Water conservation using **native trees and plants**. The City should direct the Parks Division to revise its urban forestry plan to emphasize drought-resistant native plants and native or fruit-bearing trees. (Dry-farmed apple trees, for example, are successfully grown by Flatfland Flower Farm in Sebastopol). A native/fruit-bearing replanting program can be financed with an open space fee on new development.

ADDITIONAL TASK FORCE RECOMMENDATIONS

1. **Greywater:** The City should streamline the permit process for and provide technical assistance to residents who wish to install greywater systems.

2. **Rainwater:** The Task Force recommends investment in rainwater catchments and rain barrels sooner rather than later, as the price of these plastic products is likely to soar alongside oil prices.

3. **Use the Purple Pipe:** The City should take maximum advantage of this recycled water. Its plans to tap this water source for the new animal shelter is a good start.

4. **Amend the Residential Energy Conservation Ordinance**: This law requires installation of low-flow showerheads and aerators at the point of sale. Given recent

product innovations, this ordinance should be amended to **require state-of-the-art low-flow showerheads and dual-flush toilets**.

5. **Require Pex Piping**: Berkeley should pass an ordinance requiring Pex piping in new construction and remodels.

6. **Dual-flush toilets**: The City has begun the process of replacing standard toilets with low-flow models. It should continue doing so, opting for dual-flush models wherever possible in all city-owned buildings.

7. **Conservation Rebates**: The City of Berkeley could offer a rebate program to its residents (like in Santa Monica), encouraging them to install greywater systems, composting or dual-flush toilets, catchment devices and drought-resistant vegetation.

8**. Composting Toilets**: We propose that the City make a concerted and coordinated effort with other cities through the Green Cities California initiative to convince the state legislature to alter the plumbing code to allow for composting toilets, following the lead of states like Arizona and Massachusetts.

9. **Bring Your Own Towel**: The Berkeley YMCA uses approximately 10,000 to 14,000 gallons of water a day laundering towels (plus huge amounts of electricity drying them). Some YMCAs have stopped providing towels or charge for them. Although customers perceive this as an inconvenience, there is simply no justification for squandering such a huge volume of water. **The Task Force urges the City to request that the YMCA and other gyms cease providing free towels.**

RECOMMENDATIONS FOR BERKELEY UNIFIED SCHOOL DISTRICT:

1. Install low-flow aerators and toilets at all facilities.
2. Consider replanting with drought-resistant vegetation.
3. Ensure that landscape maintenance staff are trained in appropriate irrigation.

The Task Force consulted with the following individuals and organizations in the preparation of this chapter:

Richard Harris, EBMUD's conservation coordinator

Andy Katz, EBMUD Director, Ward 4

Bailey Green, GO2 Water Treatment

Bay Localize, Oakland

Clivus Multrum (manufacturer of composting toilets)

Jennifer Jackson, EBMUD

John Hake, EBMUD

Laurie Seere, EBMUD

Richard Harris, EBMUD

Alice LaPierre, Office of Energy & Sustainable Development

David O'Donnell, TREES (Trans-Agency Resources for Environmental and Economic Sustainability), Los Angeles

Tony Rodriguez, Berkeley YMCA

Neil Shapiro, City of Santa Monica, Environmental Services Division

Documentary Sources

EBMUD 2005 Urban Water Management Plan, www.ebmud.com
Bay Localize, *Tapping the Potential of Urban Rooftops: Rooftop Resources Neighborhood Assessment*, www.baylocalize.org

3. TRANSPORTATION AND OIL CONSERVATION

Movement of people and goods in an oil-scarce environment presents one of the most obvious and challenging issues. Although electric vehicles are becoming available, it will be decades before the nation's vehicle fleet is entirely electric. In the interim, a small number of diesel vehicles may run on bio-fuels. AC Transit is phasing in natural gas buses, but the volatility of natural gas prices makes this strategy an unreliable one. A growing number of cities are moving toward electric-powered mass transit options that can eventually run entirely on renewable sources of power. These options include trains, trolleys and trolley buses connected to overhead power lines.

Ultimately, cities will of necessity become places in which walking, bicycling and mass transit become the primary modes of transportation, with essential goods delivered by electric trucks and personal vehicles limited to disabled and elderly residents. The more Berkeley and other Bay Area municipalities do now to promote car-free transportation modes, the smoother the transition will be.

REDUCE TRAFFIC

Berkeley households drive an average 8677 miles a year, less than half of the national average of 21,000. According to a 2007 study by Wilbur Smith Associates, drivers cruising for parking spots constitute 13% of traffic in downtown Berkeley. San Francisco and other cities are implementing "congestion management" or "smart parking" plans that study parking usage patterns and then adjust the number and price of spots accordingly. UCLA professor Donald Shoup, who developed the concept of smart parking, also recommends that cities dispense with zoning regulations that require a certain number of free, on-site parking spots for new construction. Paradoxically, Shoup's research has demonstrated that reducing parking-related traffic often involves *reducing* the number and increasing the price of parking spaces, so that drivers will have an incentive to leave their cars at home.

TRAFFIC REDUCTION RECOMMENDATIONS

1. Partner with the UC Berkeley Program in Transportation Engineering to design a "smart parking" plan for Berkeley.
2. Incentivize high-density, car-free development, especially along transit corridors.
3. Encourage Berkeley businesses to hire Berkeley residents, and undertake a study of the correlation of local employer's needs with residents' educational attainment and job skills.
4. Continue providing city employees with EcoPasses, and encourage private employers to do the same.
5. Do not provide free parking to able-bodied city employees who are not required to drive to work because of job responsibilities.
6. Revise the residential parking permit fee structure so that households with multiple and/or gas-guzzling vehicles pay more.

PETROLEUM CONSERVATION RECOMMENDATIONS

1. Require city departments with vehicle fleets to dispatch the most fuel-efficient vehicle possible on any given trip. For example, the Fire Department could send a car instead of a fire engine when responding to a non-fire related call.
2. Step up execution of existing plan to replace city fleet with hybrids and plug-in electrics.
3. Contract with a company that provides B100 for diesel vehicles such as ambulances, fire engines and school buses.
4. Ban the use of all gas-powered garden equipment (lawn mowers, weed whackers, leaf blowers, etc.).

PROMOTE BIKING

Berkeley has implemented many of the recommendations set forth in its Bike Plan 2000, taking an impressive first step toward promoting a strong bike culture. There are, however, a number of additional steps that can be taken to make bicycling a safer and more convenient option.

In May, 2008, Washington, DC became the first U.S. city to offer public bike rentals at 10 stations in the downtown area. D.C. follows in the footsteps of fourteen European cities that rent bikes to five million subscribers. Businesses in these cities have observed an increased number of patrons in areas where public bikes are available, because bicyclists are more likely to stop and shop or dine if they don't have to hassle with parking.

Another important European innovation (that has also caught on in Boulder, Bogota and New York City), is the provision of separated bike lanes in which bicyclists are protected from moving traffic by a physical barrier. A less expensive but less safe alternative is the painting of bike lanes a vibrant blue or green. Whatever the form, dedicated bike lanes have a dramatic effect on bicycle usage: In San Francisco, ridership increased 140% when bike lanes were installed on Valencia Street and 300% when the Howard Street bike lane went in.

In many cities, you can now see pedicabs (bicycle taxis) toting passengers around. Denver-based Main Street Pedicabs received the Downtown Denver Association Award a few years back because of the increased patronization of downtown businesses associated with the heavy use of pedicabs. Main Street Pedicabs and other manufacturers believe cities should implement regulations governing the use of pedicabs so as to ensure safety for drivers and passengers. Their model regulations are available on their website (www.pedicab.com).

The Task Force was disappointed to learn of delays in opening the downtown Berkeley bike station. An above-ground bike station with secure parking and repair and other services would go a long toward fueling a safe bike culture in Berkeley. It is a top priority we cannot afford to shunt aside, nor should we risk losing the BART funding already appropriated for this project.

Other issues of concern to bicyclists include road safety, secure bike parking, and dangerous potholes. It is generally understood among bicyclists that, the more bikes there are on the road, the safer biking becomes.

In Copenhagen, 36% of commuters bike to work, and the city will invest $200 million in bike facilities with a goal of 50% by 2015. Given our climate and topography, we should be able to meet or beat that goal.

BIKING RECOMMENDATIONS

1. Fund the downtown Berkeley bike station in accordance with current plans.
2. Prioritize bike lanes for street resurfacing projects.
3. Develop regulations governing the use of pedi-cabs.
4. Bring a public bike rental program to Berkeley, with rental stations located at all BART stations and major bus stops.
5. Provide more bike parking, especially in the areas of Telegraph Avenue, 4th Street/Amtrak station and downtown. Convert some street parking spots to bike parking (10 bikes can fit in the space of one car parking spot).
6. Leave decommissioned parking meters in place as extra bike parking.
7. Add bike parking as a LEED element for new development.
8. Provide secure bike parking at all BART stations.
9. Continue providing city employees with bikes and electric bikes for conducting city business and publicize the availability of these bikes.
10. Provide separated bike lanes on streets currently designated as bike routes.
11. Dedicate one lane of Claremont Avenue to bicycles to ensure a safe biking route from Berkeley to Rockridge.
12. Educate residents (drivers and bicyclists) about responsible road behavior.
13. Implement a trial car-free weekend in one commercial district.
14. Initiate a Bike-to-Work/School on Fridays program to encourage maximum ridership one day per week.

PETROLEUM SHORTAGE EMERGENCY

According to National Petroleum Council member Matthew Simmons, U.S. consumers are vulnerable to a run-on-the-bank scenario in which real or perceived gas and diesel shortages incite a panic, leading drivers to rush to the filling station to top off their tanks. If this occurs, the nation's supply of refined petroleum would be depleted in one week, crippling the trucking and agricultural sectors. The U.S. Department of Energy refused Simmons' plea to be prepared to ration gas in such an event.

In California, the governor has the authority to seize petroleum stocks and allocate them for emergency and essential services. Effective operation of the state's emergency response plan depends on local government coordination. The CA Energy Commission offers energy emergency planning seminars for local governments.

EMERGENCY PREPAREDNESS RECOMMENDATIONS

The City of Berkeley should:

1. Ensure that local officials and staff attend Energy Commission emergency planning seminars (coordinated by Sherry Stoner at 916-654-5005).
2. Maintain a small reserve of gas and diesel for emergency services vehicles (in excess of the 30,000 gallons currently stored), enough to weather a two-month supply disruption.

MAKE MASS TRANSIT MORE ACCESSIBLE

Although Berkeley does not have independent authority or financing for mass transit, our mayor's position as an MTC Commissioner means that our City can influence transportation planning for the Bay Area. The following improvements are needed:

1. Bus Rapid Transit zones with dedicated lanes
2. Free ride zones in congested areas
3. Trolleybuses that run on electricity at lower cost and with less emissions than diesel buses or trolleys on tracks
4. Better integration of bus service among the nine counties, so that bus trips become a viable alternative for longer-distance trips (eg. from San Jose to Santa Rosa or Oakland to Mill Valley)
5. Dedicated bike lane on Bay Bridge (both spans)
6. Easing of bicycle restrictions on BART and CalTrans and installation of bike racks on all AC Transit buses
7. Continue surveying residents' transportation patterns and educating them about alternatives through the TravelChoice and Safe Routes to School programs.
8. Institute a Transportation Services fee to raise revenue for alternative transportation programs (as recommended in the Climate Action Plan).
9. Adopt all of the recommendations concerning mass transit and car share accessibility set forth in Chapter 3, Goals 5 and 6, of the Climate Action Plan.

The Task Force consulted with the following individuals and organizations in the preparation of this chapter:

Timothy Burroughs, Climate Action Coordinator

Jennifer Cogley, Office of Economic Development

Neal DeSnoo, Office of Energy and Sustainable Development

Donald Shoup, Chair, UCLA Department of Urban Planning

Matt Nichols, Department of Public Works

Jason Meggs, East Bay Bicycle Coalition

Missing Link bike store

Mike's Bikes

Ruth Vanderkooi, Main Street Pedicabs (Denver)

Documentary Sources

Berkeley Climate Action Plan, 2008
Berkeley Bicycle Plan, 1998

4. PEAK MEDICINE

Higher oil and gas prices could have a range of serious effects on health care delivery. Patients are reliant on vehicles to transport them to doctors' offices and hospitals. The manufacture and shipment of pharmaceutical drugs, vaccines and birth control rely on petroleum and petrochemicals. Nearly all hospital supplies are made of plastic and intended for single-use, generating enormous volumes of infectious and generic waste that is transported to special waste disposal facilities. By way of example, hospitals use 1.4 million plastic IV containers and generate 6600 tons of waste *every day*. Moreover, hospital buildings use twice the energy per square foot of regular office buildings and rely on diesel-run backup generators in the event of a power outage.

Our advanced, high-tech medical system is as reliant on fossil fuels as our agricultural system. As Oakland anesthesiologist Richard Glaser put it, "If you don't have energy, you don't have surgery."

In the event of a severe economic depression, high levels of unemployment will result in increased numbers of uninsured residents. The health care needs of residents already strain the limits of county hospitals and other government-funded programs. The City should expect a significant increase in need for free and reduced-cost health care, though precisely when is difficult to predict.

The impact of peak oil on public health is an issue that only very recently hit the radar screen of the Centers for Disease Control. (See article by CDC doctor Howard Frumkin in *Public Health Reports*, Jan-Feb, 2009). As with food security, it is no understatement to say that the federal government's level of preparedness is close to nil.

The Task Force found the issue of peak oil and gas impacts on health care to be the most challenging to analyze and concluded that, more than any other sector, the impacts here are largely beyond the sphere of the City's influence. Pharmaceutical and surgical supply manufacturing are embedded in a global market that is impervious to local government authority. Health care consumers, likewise, participate in a corporate-controlled health insurance system.

On the other hand, there are certain steps our local hospitals can take to reduce their energy usage and waste (many of which were outline in a recent *Time* magazine article), and the Task Force recommends that the City urge the hospitals to take these steps as soon as possible. In addition, we foresee a greater reliance on "alternative" medicine (e.g. acupuncture, herbs, homeopathy) and have general recommendations for how the City can promote the vitality of Berkeley's already booming alternative medicine sector. Finally, we urge the City to consider initiatives that would help ensure the provision of basic health care services to uninsured residents.

SUSTAINABLE HOSPITALS

Around the country, a number of hospitals are beginning to participate in sustainability initiatives to reduce their energy usage and waste and to procure locally grown food. In the Bay Area, Kaiser, John Muir (Walnut Creek), and St. Joseph's (Stockton) participate in farm-to-hospital programs while Alta Bates, Kaiser-Hayward and UCSF are among the 141 hospitals that have been recognized as environmental leaders by Practice Greenhealth. For all of its laudable efforts, Alta Bates is still a huge consumer of electricity, natural gas and plastic supplies, all of which will be in short supply in years to come.

Children's Hospital Oakland (CHO) has not, to our knowledge, undertaken any major sustainability initiatives.[4] Because CHO is the only children's hospital in the East Bay, its viability is of critical importance.

A number of programs exist to help hospitals become more sustainable. The EPA Energy Star for Health Care alone can help hospitals reduce their energy by 11%. Other innovations modeled by leading hospitals include the adoption of LEED standards, "environmentally preferable purchasing" standards, composting of food waste, on-site bio-fuel stations for hospital fleets, exclusive use of tap water, installation of energy-saving computer software, appliances, and boilers, solar panels, and native vegetation. The following is a list of resources available to CHO should it choose to utilize them:

Health Care without Harm, www.noharm.org
Practice Green Health, www.practicegreenhealth.org
Center for Health Design, www.healthdesign.org
Global Health and Safety Initiative, www.globalhealthandsafety.org
Teliosis Institute, www.teleosis.org

ALTERNATIVE MEDICINE

When Cuba lost access to Soviet oil in the 1990s, one of the areas most drastically impacted was health care delivery. Although Cuba boasts a ratio of one doctor for every 170 citizens and provides free health care to all citizens, the nation faced the loss of petrochemical pharmaceuticals and energy-intensive treatments. Its response was to transition toward a system that emphasizes preventative care, herbs, acupuncture, homeopathy and public service announcements teaching citizens how to use acupressure for pain relief. Doctors treat patients during home visits and at the many "polyclinics" scattered throughout neighborhoods. These polyclinics provide one-stop shopping so that patients can get the diagnostic tests, medication and treatment they need with minimal transportation. Cuba's health care system is one of the best in the world, with infant mortality and life expectancy the same as in the United States.

Here in Berkeley, we are fortunate to have a strong and diverse medical community, which includes, in addition to allopathic practitioners, many acupuncturists and herbalists, a TCM

[4] CHO provided extremely limited and general responses to our questionnaire.

(traditional Chinese medicine) training academy, the Hahnemann Clinic (homeopathy) and a multitude of body workers who treat patients without medicines.

TCM practitioners, however, are almost entirely reliant on needles and herbs imported from China. There is one former acupuncturist in Petaluma who grows and distributes medicinal herbs and a small medicinal herb consortium in Sonoma. These growers could provide only a small fraction of the herbs needed by Bay Area residents.

We are also fortunate to have the Berkeley Public Health Division acting as its own health care jurisdiction. This agency provides excellent family planning, nutrition, lead poisoning prevention, bicycle safety and anti-smoking programs that serve to prevent avoidable injuries, diseases and unwanted pregnancies among Berkeley residents.

ALTERNATIVE INSURANCE

Twenty percent of Californians don't have health insurance, and the number is growing. A peak oil-triggered economic recession would bring about higher levels of unemployment, meaning many currently insured residents could lose their coverage.

The Ithaca Health Alliance is a program staffed by volunteer health practitioners who provide free services (western and alternative) to uninsured individuals. Berkeley could implement such a program by donating free space and recruiting practitioners to donate a half-day a month of their time.

Another model is the San Francisco Health Plan which provides health care to 50,000 uninsured residents, including one of every four children in San Francisco, with an emphasis on preventative care. However, funding for this program comes from the state and federal government and, therefore, cannot be relied upon in the long term.

ALTERNATIVE-FUELED MEDICAL TRANSPORT

Berkeley is home to a large number of elderly and disabled residents who must travel in motor vehicles. The City should look at options for fueling ambulances and taxis with 100% recycled bio-diesel and should begin procuring a fleet of electric vehicles that will be available to transport residents in the event of an oil shortage. (Because of recharging time for electric vehicles, the City should maintain at least one liquid fuel-powered emergency vehicle at each station). By the same token, it should look toward procuring an alternatively-fueled vehicle to replace its HIV/AIDS mobile van. The City should urge the county to begin replacing its paratransit vehicles with hybrid or bio-diesel vehicles, as such vehicle become available, to ensure the mobility of elderly and disabled residents.

BAYER

As a major consumer of water and energy and a major waste generator, the City should require Bayer to achieve energy-independence by installing solar or wind power and undertake water efficiency measures at their facility. As a large employer, Bayer should be urged to implement flex-time, carpool and other fuel-saving strategies.

RECOMMENDATIONS:

1. Urge CHO to undertake a sustainability initiative in partnership with Health Care Without Harm or another organization.
2. Request from Alta Bates an accounting of the sustainability measures it has implemented, including metrics indicating volumes of waste and energy reduced.
3. Urge Alta Bates to participate in a farm-to-hospital program that will provide healthy, local food to its patients.
4. Urge Alta Bates to install a rooftop solar system to offset some of its electricity usage.
5. Impose energy and water efficiency requirements on Bayer.
6. Begin substituting electric and/or bio-diesel vehicles as the City's existing ambulance fleet ages.
7. Expand all public health programs that focus on disease prevention, nutrition and family planning.
8. As the opportunity arises, facilitate the growth of the alternative medicine sector by, for example, ensuring their access to affordable office space, incentivizing the purchasing of locally-grown medicinal herbs and providing city employees with health insurance that covers alternative treatments.
9. Investigate options for providing insurance to all residents and prepare a contingency plan in the event of a larger-than-expected proportion of uninsured residents.
10. Rigorously enforce air and water quality regulations governing major polluters such as Pacific Steel Casting, Berkeley Forge and Tool, Bayer, gas stations and Lawrence Berkeley Labs.

The Task Force consulted with the following individuals and organizations in the preparation of this chapter:

Dr. Richard Glaser, Oakland

Stacy Malkan, Health Care Without Harm

Lucia Sayre, Physicians for Social Responsibility

Deborah Pitts, Alta Bates

Gary Turchin, Children's Hospital of Oakland

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5. RELOCALIZE NOW!

The decline of world oil supplies will fundamentally alter the way the world does business. Our global economic system requires exponential growth to maintain itself, and this has largely been possible because of the heretofore increasing supply of cheap energy. Inevitably, the reversal of the globalized economy, a trend foretold in the June 9, 2008, issue of *Newsweek*, will mean a fundamental change in our system—like it or not, the future economy will be much more reliant on locally-produced goods than is our current system.

It is difficult to predict the financial impacts of energy market volatility and the extent to which it will affect consumer prices, unemployment, social cohesion and tax revenues. Suffice to say we are entering a period of uncertainty at best, and chaos at worst. For the purposes of this report, the Task Force's working assumption is that all levels and branches of government will continue to function in some capacity and that social and economic problems will be grave but not cataclysmic. We anticipate that, in the future, local government will play a larger role in helping citizens meet their basic needs.

Regardless of the magnitude of the crisis, there can be little doubt that the more self-reliant Berkeley can become—the more its citizens rely on the people and natural resources of the Bay Area to meet their needs—the better we will fare. In particular, we must move aggressively toward developing and expanding local sources of food, clean energy and manufacturing of vital goods, and we must ensure we have the capacity to move goods and people.

To prevent the flight of capital and keep money circulating locally, private citizens should be encouraged to invest in the local economy and the creation of truly local businesses instead of a declining stock market. Catherine Austin Fitts, former assistant secretary of housing during the first Bush administration and president of Solari Investment Advisory Services, is one of the few economists openly advocating relocalization and "financial permaculture." She speaks of the importance of relocalizing banking to preserve local wealth and outlines a plan of how communities can invest in a truly local economy. The depth of Austin Fitts' work precludes more than passing reference here, but the Task Force urges city officials and staff to **attend a financial permaculture training** or obtain other materials available from Solari (http://solari.com). Along similar lines, we encourage city staff to attend trainings offered by **Transition United States**, a new organization that is bringing the innovative and inspiring British "Transition Towns" movement to the U.S. (www.transitionus.org).

Securing our economic future will require a strategic plan to relocalize not only investing and agriculture but manufacturing. Berkeley's "buy local" campaign is a good start, but it must be noted that most of what is sold in our stores is imported. The Green Corridor is another good idea so long as it has teeth—it needs to represent a tangible commitment to attracting local, sustainable businesses rather than merely a green soundbyte. The Task Force urges the City to look for ways to direct **federal stimulus funding** toward creative programs that develop our local economic infrastructure.

Local currencies are making a comeback as a means of promoting investment in the local economy. The NU system in six European cities provides residents with an electronic "smart card" that adds credit for carbon-saving activities such as riding the bus which can then be used to buy a bike or solar panels. In Seattle and Boston, the InterraCard gives consumers points every time they patronize a local green business. The Time Bank Store in Dane County, Wisconsin allows members to earn and spend "time dollars" by trading services with one another. Then there's the Swiss WIR currency. Implemented in 1934 and still going strong, the WIR is used by businesses for direct transactions with one another, obviating the need for bank loans and keeping money circulating within the ranks of participating businesses. One quarter of all Swiss businesses use the WIR Bank. (An excellent article on the resurgence of local currencies can be found in the Spring, 2009 issue of Green America Today (http://www.greenamericatoday.org/pubs/caq/. Another good resource is the Time Banks Network at http://community.timebanks.org).

One specific initiative the City could undertake is an **energy summit for Berkeley businesses**, coordinated with Oil Independent Berkeley, the Chamber of Commerce and other business associations. This summit would serve to educate local businesses about the coming energy crisis and encourage them to start developing a business plan that will help them weather price shocks and supply disruptions. It will also be an opportunity to hear from business owners what kind of support they need from the City to insulate themselves.

Another important leadership function Berkeley can spearhead is the initiation of a nine-county **Bay Area Energy Descent Council**. This body would serve to monitor energy market conditions and develop a coordinated, regional response as circumstances evolve. This body might be an independent entity or exist under the auspices of the Association of Bay Area Governments.

There will inevitably arise an array of social services needs that the City cannot afford to fund. Tragically, the City is likely to see its revenue dwindle just at the time when lifeline services are in the highest demand. The only solution will be for the City to call upon residents to devise innovative, neighborhood-based community care networks. In this regard, we are fortunate to live in a City whose residents are known for their willingness to extend a helping hand.

Our economy will be predominantly local in the future—whether it be a controlled transition or a sudden chaotic crash depends on the choices we make now. People can live without oil, but they can't live without food, water, medicine, clothing, or shelter. Since oil currently supplies all of these needs, we must relocalize our economy to function more like it did in the past (but with the benefits of a century of civil rights and technological advances).

One positive vision of the future, set forth in the Oakland Oil Independence by 2020 Task Force, is small, self-reliant neighborhood/villages connected through trade networks by modern, electrified transit. With vision, courage, and hard work we can make a successful transition to a local sustainable economy that meets the needs of all its citizens. By integrating the benefits of modern technology with small-scale economic models that served early European-Americans well, we can thrive in a future without oil.

Appendix A: Task Force Members

Chris Coelho. Chris has a Masters degree in Environmental Sciences from CSU Chico. He has spent the last four years studying peak oil and resource depletion and has been working with various environmental, faith-based and community groups teaching about this subject.

Ellen Doudna. Ellen is former teacher in the public schools of San Pablo. A vegetable gardener since childhood and amateur naturalist, her interests include natural resource management, bioremediation, ecological economics, and public policy. A concerned citizen now working in non-profit fundraising, she has researched the phenomenon of peak oil for the past five years.

Erica Etelson. Erica is a journalist and former environmental and human rights attorney. Her articles on peak oil have appeared in the *San Francisco Chronicle* and the *Energy Bulletin*, and she was a speaker at the 2008 conference of the Association for the Study of Peak Oil and Gas (ASPO).

Grey Kolvezon. Grey is the co-founder and co-director of Cycles of Change, a non-profit organization that operates bicycle education and distribution programs at public schools and community centers in the East Bay. In addition, he has eight years experience developing and implementing garden education programs at public schools and on public lands in the East Bay, working primarily with EBAYC (East Bay Asian Youth Center).

David Melly. David is a licensed acupuncturist with a private practice in Berkeley. He has written about peak oil for the California Journal of Oriental Medicine.

Jennifer Radtke. Jennifer is the founder and co-owner of the BioFuel Oasis.