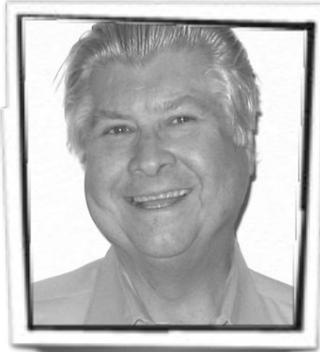


Water And Power Associates. Inc.

Year 39, Volume 1

Newsletter

January 2010



President's Notes

By Thomas J. McCarthy

As we start this new year, the Board wishes all of our members a wonderful New Year.

I invite you to come to our annual meeting on February 13, 2010, at 10:00 a.m. at the A level conference center at the JFOB . This is your opportunity to come and discuss with the Board your ideas for the Associates to investigate or offer public discussion relative to LA's Water and Power System.

Water News

This past year was a remarkable time for the water and power industries. After many years, the politicians were finally able to agree to a set of principles to protect California's precious water resources for the future. The legislation passed the



California Legislature on November 4, 2009. Included in the package are provisions for water planning, development, restoration and governance for the Delta; a groundwater monitoring program; requirements that the State achieve a 20 % reduction in urban per capita water use by 2020; agricultural water management plans; and efficient water management practices for agricultural water suppliers be implemented.

The water bill package also promotes expanded development of sustainable water supplies at the regional level. Significantly, the water legislation authorizes an \$11.14 billion water infrastructure bond for the November 2010 ballot.

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Annual Meeting of Full Membership

Saturday, February 13, 2010
10:00 a.m. - 11:30 a.m.
A-Level, LA/Portland/SF Rooms
John Ferraro Building
111 N. Hope St., L.A.

New access control security fixtures and new security screening protocols were recently installed at the JFB. Every entrant to the building **must** present DWP I.D. or pre-approved I.D.

For our February meeting the names of the attending Board Members must be forwarded to DWP and each will be required to bring valid I.D. to get into the parking lot and into the building. *General members will be required to provide valid identification* for entrance to both the parking lot and the building. **General members should bring a valid DWP issued Retiree ID badge or drivers license.**

Associates membership is open to all who have an interest in the research and education of critical water and energy issues affecting the citizens of Los Angeles, Southern California and the State of California.

At present we are especially looking for those with computer, photography, or water issues knowledge; but **all are welcome.**

To join or to learn more about the Associates, contact our Membership Chair, Dave Oliphant at olinlpr@aol.com. ✽

President's Notes

President's Notes

(Continued from page 1)

Power News

The California legislation developed its own greenhouse legislation last year but put it on hold to see what will happen at the federal level. In June 2009, the House of Representatives voted out of the House H.R. 2454 known as the American Clean Energy and Security Act (ACESA).

The bill creates a mandatory economy-wide cap and trade program to regulate emissions of greenhouse gases including carbon dioxide, methane, nitrous oxide, perfluorocarbons, nitrogen trifluoride, sulfur hexafluoride and certain hydrofluorocarbons. This program requires reductions in emissions 17% below 2005 levels by 2020 and 83% below 2005 levels by 2050.

ACESA also includes many programs to:

- require up to 20% of electricity production to be from renewable sources,
- increase energy efficiency for buildings, appliances and industry,
- increase investment in renewable energy,
- enhance development of carbon capture and sequestration technology, and
- provide assistance to low-income families and workers impacted by the provisions of the bill.

The Clean Energy Jobs and American Power Act was introduced on September 30, 2009, by Senator Barbara Boxer and Senator John Kerry. The bill sets economy-wide emission reduction goals with specific targets of 20% emissions below 2005 levels by 2020 and 83% less emissions by 2050. The bill creates a cap and trade type program, Pollution Reduction and Investment, to work towards this goal. According to the Senate Environment and Public Works Committee, the system would only apply to an initial 7,500 facilities in the country.

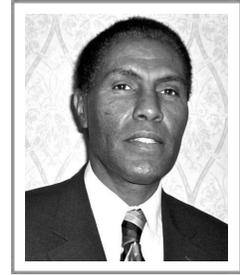
Additional provisions of the bill include:

- enhanced transportation efficiency and emissions standards;
- development of carbon capture and sequestration programs;
- support for water and energy efficiency efforts; training, research and funding for the renewable energy sector; and
- climate change adaptation provisions.

The Obama Administration has been receiving much outrage lately on behalf of the proposed cap-and-trade bill (HR 2454). This bill, *which will dramatically increase our electric bills and further destroy jobs*, is based merely upon computer models and provides no guarantee of success.

As you can see, this Cap and Trade legislation is very controversial. The Associates will continue to track this legislation and offer our opinion as the legislation zig-zags through congress. ❁

Guest Speaker



Dr. Mohammed (Mo) J. Beshir,
Ph. D., M.B.A., P.E.
Manager of Power System Planning
and Development, LADWP

Mohammed (Mo) Beshir, DWP Manager of Resource Planning, was the guest speaker at the Board's December meeting. With the Department for 27 years, Mohammed Beshir has a doctorate from USC with training in metallurgy and power administration among other things. He is currently involved in planning power transmission, dealing with renewable energy resources and a system to integrate their development into general power generation planning. He sits on numerous committees including a statewide committee that deals with the State's power transmission grid.

The DWP is going through many changes with new activities in several areas, which can often cause counterproductive conflicts. Today, the environment is the main focus. For the past 15 years, the Department has been developing new resources to achieve a goal by the year 2010 of 20% generation of energy from renewable resources (solar, wind and geothermal facilities). The State has a goal of 32% of energy statewide being generated from renewables by 2030, and may even be revised to a 40% goal. Since Los Angeles is a major energy producer in the State, we try to do more and have a goal of 40% renewable by 2020. However, we need to go where the resources are

Guest Speaker Presentation

available to get the power. For example, wind power is in the Tehachapi Mountains. This requires building additional transmission lines. That in turn raises other issues.

We expect to reach the goal of 20% renewable power generation in 2010. Fifty percent of that 20% will be wind power and that creates issues with building or adding to the transmission lines. We need to obtain power paths on lands owned by others such as the Bonneville Power Administration, which increases the costs. Currently, 55 MW of power from solar energy at First Solar Power Plant is being held up in the City Council. There are some projects which will not make it through the development process. So, we need to continue to maintain reliable power supplies while the renewables are being developed while not wanting to increase use of fossil fuels. Therefore, we have gone to short-term purchasing through the market to make up for any energy deficits. With the new projects have come new transmission needs in four areas.

1. We are currently upgrading the **DC line from Utah**. We are purchasing 200 MW from Intermountain Power Project (IPP) and will sell the power as we ramp down our own needs to use it.

2. At **Pine Tree** in the Mojave Desert, we get 32% of our wind power. It is low quality power but the price is right though there are scheduling and regulatory issues. The transmission line from Pine Tree is being upgraded. To integrate the power will require a 230 Kv line.

3. Some units at **Castaic** are off-line currently for maintenance. The Owens Valley — Castaic Transmission Network will be reconstructed by 2014. This transmission work is going smoothly and will allow us to get

up to 6000 MW of power from the area when completed.

4. **The Pine Tree Project, Pine Canyon Project**, and other solar projects are all in the same area involving power transmission needs. We are also looking to bring solar power from the Owens Lake, 80 miles. With Pine Tree we have two properties owned by others that required us to negotiate a 20 year lease that can be extended to 30 years. Half of the Pine Canyon Project is on land we purchased from GE.

Wind power raises other issues. The projects which are independently owned may require changes 20 years down the road. **With added megawatts, comes increased turbine size. Two and ½ MW requires 270 foot towers; one and ½ MW requires 240 foot towers.** This created a problem with the military because the blades can interfere with drone aircraft which fly at the 300 foot level. Military aircraft from Hueneme to Mohave pass through the area. Birds can be affected too, though the bigger tower blades move slower and birds can see them. But, bats use sound to detect objects in their path and the blades don't reflect the bats' sound signals.

Dealing with the local communities is better if we own the land and so we are buying property. We have purchased land on which to develop geothermal and solar projects, gaining experience in the process. We have deferred acting on some transmission lines to see if we can jointly develop an alternate transmission route with other Utility owners. We are also part of a transmission group with *Imperial Irrigation District and Southern California Public Power Authority*.

We want to upgrade *Scattergood* to improve efficiency. The Independent System Operator (ISO) is working with DWP so we can provide them with additional energy if needed. The stimulus package from the federal government includes \$60 million which we can put

into smart grid technology to improve efficient delivery and use of power by consumers. We have been working with the *State Lands Commission* to abate dust in the Owens Valley with the DWP Water System spending \$500 million to mitigate the problem. The Department has been investigating structures to modify the wind and reduce dust. **Solar panels on the Owens Lake dry bed could serve to generate power while abating the dust and thereby make more water available for the LA system.**

In the present world, we have to greatly reduce our CO₂ by 2030. By 2040, twenty percent of our renewables must be solar. Thus, renewables and CO₂ reduction are major issues we are working on. The Mayor wants us to get to 40% renewable as soon as possible. And, we are *not* also looking to nuclear to achieve these goals in the future. One problem with solar generation, while the fuel is cheaper, is the need to convert from DC to AC, which requires added voltage to support the system and is not figured in the usual cost savings predicted.

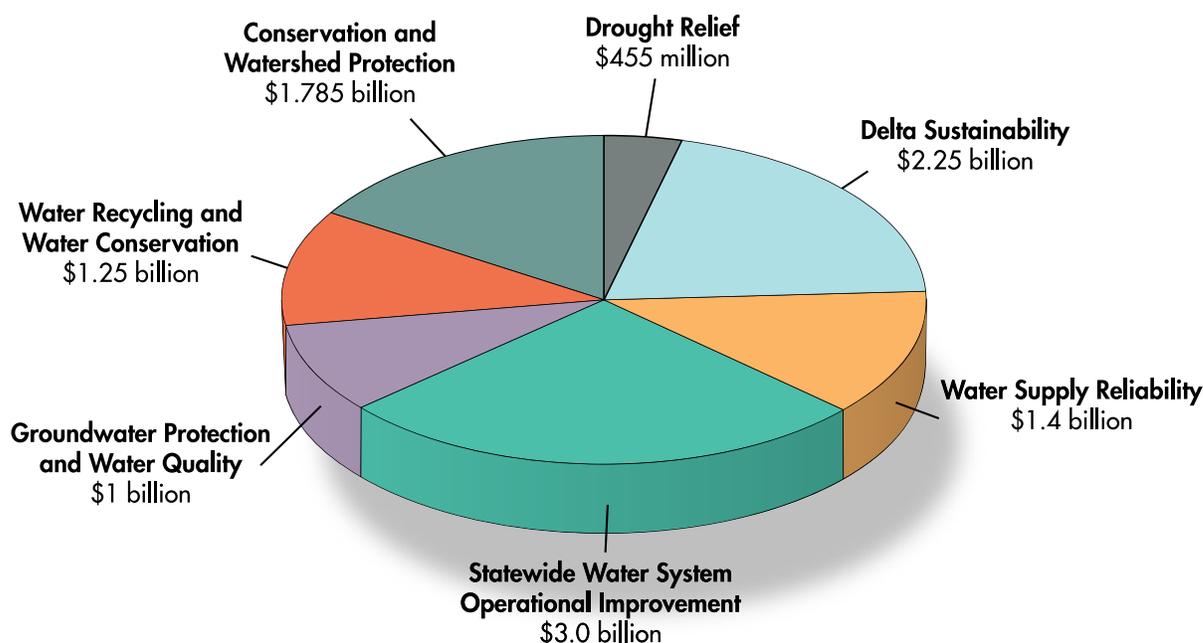
Carbon free technology is the order of the day and the speaker does not feel LADWP has any choice but to comply. *In the general discussion* it was noted that General Manager David Freeman is pushing the Department to get the percentage of renewables to 33% by 2020. But, the **mandate** to get to 20% by 2010 requires us to purchase power out of state from existing producers which means the costs to ratepayers will go up. ❀

(Review by David Oliphant and Tom McCarthy)

The California Department of Water Resources

Safe, Clean, and Reliable Drinking Water Supply Act of 2010, November 2009 Regional Funding Information

The Safe, Clean, and Reliable Drinking Water Supply Act of 2010 is an \$11.14 billion general obligation bond proposal that would provide funding for California's aging water infrastructure and for projects and programs to address the ecosystem and water supply issues in California. The bond is comprised of seven categories including drought relief, water supply reliability, Delta sustainability, statewide water system operational improvement, conservation and watershed protection, groundwater protection and water quality, and water recycling and water conservation.



All Californians would benefit from these funds. A portion of funds is dedicated to each primary watershed throughout California, and all regions will be eligible to compete for additional funds to help finance water management projects and programs with local, regional, and statewide benefits.

Safe, Clean, and Reliable Drinking Water Supply Act of 2010

The following is available for funding for Southern California.

South Coast Hydrologic Region

Includes the following counties:
Orange and parts of Los Angeles,
Riverside, San Bernardino, San Diego
and Ventura

Funding Summary for Region

- ◆ \$413 million for Water Supply Reliability programs and projects
- ◆ \$443 million in additional funding for specified South Coast programs and projects
- ◆ Eligible for a share of \$6.38 billion in other regional and statewide funding for water management programs and projects

Background Information

Drought Relief: The South Coast region is eligible for a share of \$327 million in statewide drought funding for local and regional drought relief projects, and grants for small community wastewater treatment projects and economically disadvantaged communities. In addition, three specific projects in the region will receive funding:

- ◆ \$100 million for San Diego County water supply reliability projects
- ◆ \$8 million for Maywood (LA County) for water supply upgrades
- ◆ \$20 million for New River water quality and public health projects

Water Supply Reliability:

The Los Angeles sub-region (Los Angeles and Ventura County watersheds) will receive \$198 million; the Santa Ana sub-region (Santa Ana River watershed and southern Orange County) will receive \$128 million; and the San Diego sub-region (watersheds of San Diego County) will receive \$87 million. The region is also eligible for

a share of an additional \$350 million for local and regional conveyance projects.

Conservation and Watershed Protection Funds:

The South Coast region is eligible for a share of the following conservation and watershed protection programs:

- ◆ \$150 million for ecosystem and watershed protection projects within coastal counties and watersheds. Additional funding for the region includes \$40 million for San Diego, including \$20 million for the San Diego River Conservancy; \$40 million for Santa Ana River Parkway; and \$20 million for Bolsa Chica Wetlands
- ◆ \$100 million for acquisition of water rights from willing sellers and conveyance of water to benefit migratory birds
- ◆ \$170 million for restoration and protection of wetlands, plus \$20 million specifically designated for habitat/public land linkages in Ventura County
- ◆ \$75 million to San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy
- ◆ \$75 million to Santa Monica Mountains Conservancy for watershed protection
- ◆ \$20 million to Baldwin Hills Conservancy
- ◆ \$25 million for Santa Monica Bay watershed projects
- ◆ \$50 million for coastal salmonoid restoration projects
- ◆ \$20 million for Farmland Conservancy and Watershed Coordinator grant programs
- ◆ \$50 million for California River Parkway Act projects and Urban Streams restoration projects
- ◆ \$30 million for grants to watershed education centers
- ◆ \$10 million to implement the California Waterfowl Habitat Program

- ◆ \$100 million for technical assistance and grants to protect watersheds, reforestation, vegetation management projects and fuel treatment activities
- ◆ \$50 million for Oceans Protection Act projects
- ◆ \$50 million to fund public infrastructure revolving fund mitigation programs

Statewide Water System Operational Improvements:

The South Coast region is eligible for a share of \$3 billion to fund the public benefits associated with water storage projects that improve statewide water system operations and provide Delta ecosystem benefits.

Groundwater Protection and Water Quality:

The South Coast region is eligible for a share of \$1 billion in funding, grants and loans for projects to prevent or reduce contamination of groundwater that serves as a source of drinking water.

Water Recycling and Water Conservation:

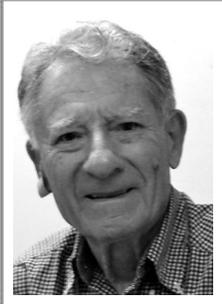
The South Coast region is eligible for a share of \$1.25 billion in funding, grants and loans for water recycling, desalination, groundwater recharge, urban and agriculture water use efficiency and conservation projects.

This is a preliminary estimate by the California Department of Water Resources and may not represent exact availability of bond funding. ❁



Submitted by
Joan A. Dym

Recalling Water War of '82, and How it Continues to Affect Southern California



By Leon Furgatch

It is difficult for Californians to obtain a true picture of their water problems because they hear the state is suffering from a drought. The implication is that relief will come as soon as rainfall returns to normal. This message masks a more serious problem that can be traced to decades of political interference in planning to avoid such shortages.

To put this in perspective, the Central Valley, California's agricultural breadbasket, and heavily populated Southern California receive very little rain and rely mostly on imported water from distant watersheds. The opposite is true in the upper third of the state. It receives huge amounts of rain and has so little population that most of this water empties into the ocean. *In fact, the average annual flow of the rivers in this north coastal region are capable of supplying more than 100 million people a year with water.*

In 1985, the U.S. Supreme Court upheld a federal law advocated by environmental groups designating the Eel, Trinity, American, Smith and

Klamath rivers in the north as scenic wild rivers, and protecting them from development. **By indirection, this delivered a fatal blow to the California Water Plan approved by voters in 1960 to insulate the state against future water shortages.**

The initial phase for this master plan was the California Aqueduct Project that began delivering surplus water from the Sacramento-San Joaquin Delta to the south in 1972. However, construction of the Peripheral Canal in the delta, an important but costly segment, was postponed until there was a need for more water in the south.

Prior to this, farming groups and water agencies had entered into contracts with the state for water, but they would not be able to obtain all of the water they had requested until the canal was built. The canal would have also provided numerous environmental benefits for the delta. It would have taken fresh water from the Sacramento River before it empties into the delta and carry it 42 miles to the aqueduct intake, near the city of Tracy in the south.

This would have allowed for the removal of powerful pumps at the intake that now draw sea water from San Francisco Bay into the vast network of waterways and also threaten fish and draw pollutants into the aqueduct.

The canal link was also designed to protect earthen levees from being breached when rivers entering the delta are at flood stage. In 1980, legislators authorized construction of the canal, but environmental groups immediately launched a successful drive to add provisions to protect the wild rivers, a proposal they were already advocating in Congress.

That drive resulted in a referendum on the ballot in June 1982, called Proposition 9. A "no" vote would not only kill the canal (which is what happened), but it would also prevent the state from developing the wild rivers because it would not have the canal to avoid the polluted delta, the natural hub for any transport of new water south.

If the measure was approved, the state would be able to fix the delta and improve the quality and quantity of the water entering the aqueduct, but it would prevent the wild rivers from being developed. So *whichever way the public voted the environmentalists' cause would be won.*

The wild rivers wording also created a split in the agricultural ranks. Those who were angered by the provisions and eager to preserve the option to complete the California Water Plan bankrolled the fight against the canal, and the environmental groups joined them in the vicious war of words that ensued.

Effects of the Water War of '82

The canal was defeated by convincing people in the north that the south was going to steal their water, and convincing enough voters in the more populous south that the canal was a costly boondoggle that was not needed and would increase their water rates tenfold.

Meanwhile, the two major agencies supplying water to Southern California residents were having troubles with their own sources of supply. **Following several successful environmentalist lawsuits, the city of Los Angeles Department of Water and Power lost 25 percent of its principal water supply in the Eastern Sierra Nevada watershed.** As a result, it turned to the Metropolitan Water District of Southern California to make up the difference. *This placed an added strain on water allocations for other member cities.*

The MWD imports water from the Colorado River and the state California Aqueduct, and it distributes the water to agencies representing communities from Ventura County to the Mexican border. The problem is the MWD is burdened by the drought - but not one in California. The drought affecting Southern California is the one in the Colorado Rockies, where several years of low snowfall have drastically reduced the flow in the Colorado River that feeds the Colorado River Aqueduct operated by the MWD.

What makes the problem even more dire is a recent judicial ruling to shut down the California Aqueduct to protect the endangered tiny delta smelt from being sucked into the pumps during spawning season. This has created hardships for growers in the Central Valley, and the MWD has dictated cutbacks to member agencies in the south.

All of these problems are reflected in the rationing and increasing water rates the public is now experiencing, and *relief will have to wait until more water becomes available to fill the aqueducts. The minuscule local rainfall will not do the trick.*

The water shortage is threatening the state's economy, and last month Sacramento lawmakers endorsed a water plan for voters to approve that will cost \$11 billion dollars and take more than a decade to implement. The huge price tag is for a variety of water projects, but the principal focus is on fixing the long-delayed problems in the Sacramento-San Joaquin Delta.

The irony is that in these negotiations the legislators avoided the words "Peripheral Canal" for fear of rekindling the water war of 1982, and in their place they used the euphemisms "conveyance" and "bypass." ❁

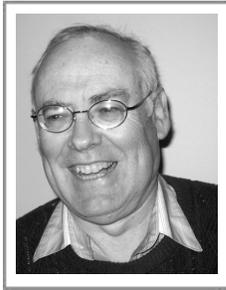
Leon Furgatch is a retired Department of Water and Power worker and a frequent contributor of water and energy articles to the Daily News.

Largest Water Systems in California

1. **City of Los Angeles Department of Water and Power**
Los Angeles County
(Serves 3,828,700 people)
2. **San Francisco Regional Water System**
San Mateo County
(Serves 2,500,000 people)
3. **East Bay Municipal Utility District**
Alameda County
(Serves 1,300,000 people)
4. **City of San Diego**
San Diego County
(Serves 1,281,400 people)
5. **East Orange County Water District**
Orange County
(Serves 1,000,000 people)
6. **San Jose Water Company**
Santa Clara County
(Serves 979,000 people)
7. **San Francisco City Water System**
San Francisco County
(Serves 800,000 people)
8. **City of Chino Hills**
San Bernardino County
(Serves 520,000 people)
9. **Eastern Municipal Water District**
Riverside County
(Serves 480,000 people)

From N.Y Times - 12-17-2009

The data was collected by an advocacy organization, the Environmental Working Group, who shared it with The Times.



By Abraham Hoffman

Every so often someone says to me, “I saw you on TV the other night.” The most recent sighting was the documentary *Inventing LA: The Chandlers and Their Times*, written and directed by Peter Jones whose TV credits include mainly biographies of Hollywood actors and actresses (Peter Fonda, Jonathan Winters, et al.). He received an Emmy award for *Stardust: The Bette Davis Story* (2006). Most of his work has appeared on the A&E Channel.

About three years ago I was invited by Jones’s production company to be interviewed for a documentary on the Chandler newspaper dynasty. When I pointed out that I was not an expert on the Chandlers, I was told that my expertise on the Owens River-Los Angeles Aqueduct story (they knew about my book *Vision or Villainy: Origins of the Owens Valley-Los Angeles Water Controversy*) would provide some important input to the documentary. We agreed on a date and a camera crew and interviewer showed up at my home. For about half an hour I answered questions to the best of my ability on the connections between Harrison Gray Otis, Harry Chandler, Moses

Sherman, William Mulholland, and Fred Eaton regarding how Los Angeles obtained water rights to the Owens River a century ago.

At the end of the interview I was told that the company was looking for funding and a slot on the PBS schedule, the local stations being KCET, KLCS, and KOCE. Having done some interviews for TV documentaries, I was sharp enough to ask, inasmuch as I wasn’t being paid for the interview, that I be given three DVD copies of the program. No problem, said the interviewer.

Three years later I learned that a preview of the two-hour program was being shown at a theater in Santa Barbara. I contacted the company and reminded them about the DVDs and in short order the copies arrived. Since I was not able to go to Santa Barbara, I could still see the documentary well in advance of the TV scheduling.

Inventing LA aired on KCET in October 2009. Anyone who watched the program would have to avoid blinking, for my time on screen amounted to two brief “talking head” comments and a voice-over sentence, for a total time of about ten seconds. **Ten seconds excerpted from an interview that had lasted half an hour.** Well, the program was about the Chandler family from Harrison Otis to his great-grandson Otis Chandler, so it seemed reasonable that my time, like the appearance of Rosenkrantz and Guildenstern in *Hamlet*, would be brief (though fortunately I did not share their fate).

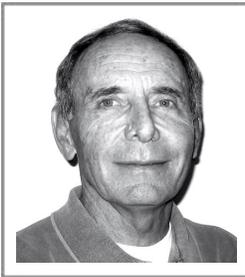
It should be noted that when all was said and filmed I was but a piece of the puzzle, and it was Peter Jones who put the entire puzzle together. One of the bigger pieces turned out to be a clip from the movie *Chinatown*. I had naively thought that after the PBS-approved miniseries *Cadillac Desert* about ten years ago, and the subsequent criticism over using a fictional movie film as a factual historical resource, that such a practice would have been discredited. My mistake. Documentary filmmakers just can’t resist rehashing old conspiracy theories, and *Chinatown* was an important and entertaining film (despite its distortion of history). There’s nothing like some ready-made controversy to spice things up and keep viewers from changing the channel.

There’s a lesson to be learned here for anyone who is invited to be a talking head on a documentary. **You can’t answer a question with a complicated answer because the director needs sound bites that are brief and pungent.** You may provide two or three pieces of the puzzle, but control of the entire puzzle is in the hands of the filmmakers. And flattering though it may be if your friends, relatives, and people you haven’t seen in ages call and tell you they saw you on TV, make sure your hat still fits your head.



Abraham Hoffman teaches history at Los Angeles Valley College.

Green House Gas Cap and Trade Program is more than a National issue for Producers of Power



By John Schumann

The media has been covering the substantial national debate regarding the Federal *Green House Gas* (GHG) emission reduction program as it relates to the use of fossil fuels to produce electric power. What has not been given much press are the “other” Cap and Trade programs that are under way at the state and regional levels.

California enacted AB 32 that requires reducing GHG emissions to 1990 levels by 2020. The *California Air Resources Board* (CARB), on November 24, 2009, released a preliminary draft of its GHG Cap and Trade regulation. *CARB’s schedule is to have the regulations in place by January 1, 2011 and begin implementation by January 1, 2012.*

The draft proposal, which includes electric power producers, provides for GHG emission allowances that will be allocated through permits, auctions and a limited use of offsets. The proposal uses a *declining balance* approach where the facilities will have to surrender/turn in GHG emission allowances over a *yet to be determined period* (annually, every three years, etc.) in order to reach the 2020 goal.

Workshops are scheduled over the next year to receive input and develop the recommended Cap and Trade program. In addition to the CARB rule making, a GHG emission reduction initiative is under way that will cover most of the western states and most of Canada. The program is the *Western Climate Initiative* (WCI) and is a partnership of 7 western states (includes California) and 4 Canadian Provinces. The WCI proposed program takes a regional approach to reducing GHG emissions. The goal is to reduce regional GHG emissions 15% below 2005 levels by 2020.

The approach is very similar to California’s except that the *targets are set for each state and province*. The dates are also fairly similar with the WCI program beginning January 1, 2012 with full implementation by 2015.

WCI is also having workshops to develop its program. The challenge will be to reach agreement, achieve the goals at the local, regional and federal level and implement a coordinated GHG emission reduction program that will be successful. ✱

AB 32, the California Global Warming Solutions Act of 2006, is a California bill that establishes a comprehensive program of regulatory and market mechanisms to achieve reductions of greenhouse gases. Using market-based incentives, it is designed to reduce carbon emissions to 1990 levels by the year 2020, a 25 percent reduction and by 2050, to 80 percent below 1990 levels.

AB 32 requires the California Air Resources Board to develop regulations and market mechanisms that will reduce California’s greenhouse gas emissions by 25 percent by 2020. Mandatory caps will begin in 2012 for significant sources and ratchet down to meet the 2020 goals.

Cap and Trade is a government program designed to protect the environment from potentially harmful emissions, such as carbon dioxide (CO2). A cap and trade program sets a maximum limit on emissions. Power providers covered by the program then receive authorization to emit in the form of emissions allowances, with the total amount of allowances limited by the cap. Each provider can then design its own compliance strategy to meet the overall reduction requirement, including sale or purchase of allowances, installation of pollution controls, implementation of efficiency measures, among other options.

Individual control requirements are not specified under a cap and trade program, but each emissions source must surrender allowances equal to its actual emissions in order to comply. Sources must also completely and accurately measure and report all emissions in a timely manner to guarantee that the overall cap is achieved. Companies that are above the cap can buy allowances for their excess emissions.

(Reprinted from W&PA Newsletter Feb. 2009, page 8.)



WHEN THE RIVERS RUN DRY: *Water—the Defining Crisis of the Twenty-First Century*, by Fred Pearce. Boston: Beacon Press, 2006. 324 pp. Maps, Index. Cloth, \$26.95. Order from Beacon Press, 25 Beacon Street, Boston, MA 02108-2892; HYPERLINK "<http://www.beacon.org>" www.beacon.org.

In recent years there has been any number of books dealing with global water issues, many of them academic treatises. Fred Pearce, an environmental journalist, did not do the research for this book from the comfort of his den. Instead, he traveled to many places around the world, speaking to peasants and hydraulic engineers, politicians and health organization officials, observing at first hand water problems from Australia to India, China to California, the Aral Sea to the Amazon River. He reports on serious problems in these places, but at the end offers a cautious optimism based on common-sense solutions to issues of drought, flood, and environmental degradation.

Pearce is not impressed with grand engineering structures such as hydroelectric dams, flood control channels, and irrigation projects that fail to fulfill the promises of politicians and engineers. Dams may produce electricity, but the chief beneficiaries are urban residents. Farmers see their crops dying for lack of the water that rivers provided before they were dammed up. According to Pearce, many dam projects were based on misbegotten notions, poor engineering, and bad economics

where one area benefits from a dam at the cost of downstream users. The worst case scenario is the construction of dams on rivers leading to the Aral Sea, once the largest body of fresh water in the world, but now shrunken to a small lake inadequate for watering the fields of farmers who remember better days. This catastrophe was the result of Soviet Union plans to make the region a major cotton-producing area. The idea succeeded for a time, but eventually resulted in the decline and deterioration of fishing and cultivation of grain.

One need not look just to central Asia for similar examples. Pearce observes that the Salton Sea continues to vex rival government agencies, Imperial Valley farmers, and environmentalists. *The Colorado River is overburdened with obligations to provide water to seven states, plus Mexico, plus Native American tribes. The sum total of the water allocations continues to be greater than the capacity of the river to provide them.* There is no real delta at the mouth of the Colorado River since all the water has been taken. Pearce also sees little excuse for the Central Arizona Project that provides water to residents of Phoenix and Tucson who waste it as if there will be no day of reckoning.

It is ironic that many of the world's water problems stem from people creating urban oases where there is little water, necessitating water imports from other areas. The fragility of this arrangement is shown in Los Angeles where in 2004 Mayor Antonio Villaraigosa imposed strict limits on residential water use; the Department of Water and Power even suggested that homeowners spy on their neighbors and report misuses of water such as letting sprinkler systems run after 9 a.m. or on days other than those permitted. Pearce's book, published in 2006, offers more optimism about Los Angeles than the current statewide drought deserves.

Pearce also reports on dams that cause floods because of managerial incompetence or engineering miscalculations. Failure to reduce capacity of a reservoir in preparation for a rainy season has in a number of instances caused destruction of crops and property and the deaths of farmers who were not informed in time to get out of the way. Apart from human failures, Pearce considers global warming as a factor in early snow melts and changing climates in different areas of the world.

Not all of Pearce's reporting is negative. He sees a return to traditional methods of water supply such as *qanats*, horizontal tunnels leading to aquifers that have proved to local farmers to be of continuing

BOOK REVIEW

WHEN THE RIVERS RUN DRY:

Water—the Defining Crisis of the Twenty-First Century,

benefit, as they have done in some areas for thousands of years. Some engineers and water agencies have revised their views on cisterns, *qanats*, drip irrigation, and other sustainable methods of storing and saving water and watering crops. When it is realized that to most of the inhabitants of the planet, water is a scarce and precious resource, it seems inconceivable that dams are built to provide water that benefits major corporations whose manufacturing methods often result in contaminating downstream water supplies.

Politicians make promises, but the need remains real. The people who are poor and the people who lack water are the same. Pearce laments the unnatural law where water flows uphill to urban users who have the money to pay for it, a metaphor that cries for reform as groundwater supplies dry up, farmland becomes desert, and people go hungry.

One hopes that politicians and water officials read this book and consider its implications. The book is not a diatribe; its hard facts are alarming, its narrative urges policy changes. Don't say we weren't warned. ❁



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Water and Power Associates, Inc.

is a non profit, independent, private organization incorporated in 1971 for informing and educating its members, public officials, and the general public on critical water and energy issues affecting the citizens of Los Angeles, of Southern California and of the State of California.

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