

Los Angeles Section

Monthly: Est. 1913

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PRESIDENT'S MESSAGE

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Los Angeles Section President

VOL. LVII NO. 6

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INTEGRATED DESIGN



When I was the Orange County Branch President, I wrote an article titled "Engineers vs. Architects" and many of the Branch members enjoyed it. I would like to share this with the Los Angeles Section members and reflect on some of the concerns I had then to see how my personal views on the subject has changed from seven years ago when I wrote this article. For those of you who may not know, I am working at an Integrated Design Firm (LPA, Inc.) in Irvine and interact with architects and engineers on a daily basis. I have been at this firm for over eight years now and feel that it is a well-integrated multi-disciplinary firm. My hope is to discuss some thoughts, old and new and try to incorporate what I have learned since the time my last articles were published.

Have you ever wondered why engineers and architects disagree to the point of bringing numerous architect-engineer jokes into existence? After all these years, I still hear complaints from engineers regarding their working relationships with architects. We, as civil engineers, still seem to feel that the public, as well as architects, other engineers, and developers, do not appreciate the work we do, and that "the architect" gets all the glory on a project. However, let's step into their shoes: Do architects really feel appreciated? Can't engineers try to understand their creativity as a mirror of our own?

Let's begin by defining who an engineer and an architect are in our society today. A civil engineer is defined as: "a person who practices a broad field of engineering that deals with planning, construction, and maintenance of fixed structures, or public works, as they relate to civilization and their process". Most civil engineers deal with, but not limited to, roads, structures, water supply, sewer, flood control, and traffic. An architect is known as: "someone who is involved in the art of planning, designing and overseeing the scheme or plan and the general administrator of construction". These definitions are similar, but ultimately the definitions say that a civil engineer is focused on the technical aspect while the architect is focused on the creative aspect. This leads to the same top three complaints I continue to hear from civil engineers.

First, civil engineers tend to agree that architects are very creative and artistic, and come up with extraordinary designs for schools, commercial centers, churches, resorts or any kind of entertainment center or facility that is available to the public. However, civil engineers also feel that architects are too encompassed in their creativity, and often forget that a project cannot work if not designed within the parameters that are given. Civil engineers may not have aesthetics as the first priority, but we do look at the overall project and see how grades and elevations function, whereas the architects are primarily concerned about how the product looks at the finish line. We make every effort to evaluate costs, aesthetics, and workability of a project, while architects seem not to focus on these issues. At our company, all the engineers are part of the design team from the beginning and invited to participate in the early part

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IN MEMORIAM

Aka: “Mr. Freeway” and “Mr. Caltrans” JACOB (JAKE) DEKEMA

1915 – 2017



Jacob (Jake) Dekema, former Director of Caltrans District 11, has died at the age of 101. Mr. Dekema passed away on April 16, 2017, of natural causes at an assisted living facility in La Jolla, CA. Locally and affectionately known as “Mr. Freeway” and “Mr. Caltrans”, he was the head of the San Diego office of Caltrans from 1955 to 1980, which at the time had a jurisdiction covering San Diego, Imperial and portions of Riverside counties. During his tenure San Diego County’s freeway network grew from only 25 miles of freeway to 485 miles of Interstate highway. Mr. Dekema was the pioneer of San Diego’s modern roadway system and Interstate 805 was named the Jacob Dekema Freeway in his honor.

Mr. Dekema was born in 1915 to Dutch parents on the island of Java in Indonesia. His father worked for several steamship companies, and the family moved frequently, living in Amsterdam, Vancouver, San Francisco and other cities before settling in Los Angeles. He graduated ‘magna cum laude’ with a degree in Civil Engineering from USC in 1937, and went to work for the California Division of Highways, which at the time was in the process of designing the Pasadena Freeway (now known as the Arroyo Seco Parkway). During World War II, Mr. Dekema served as an Officer in the US Navy, and

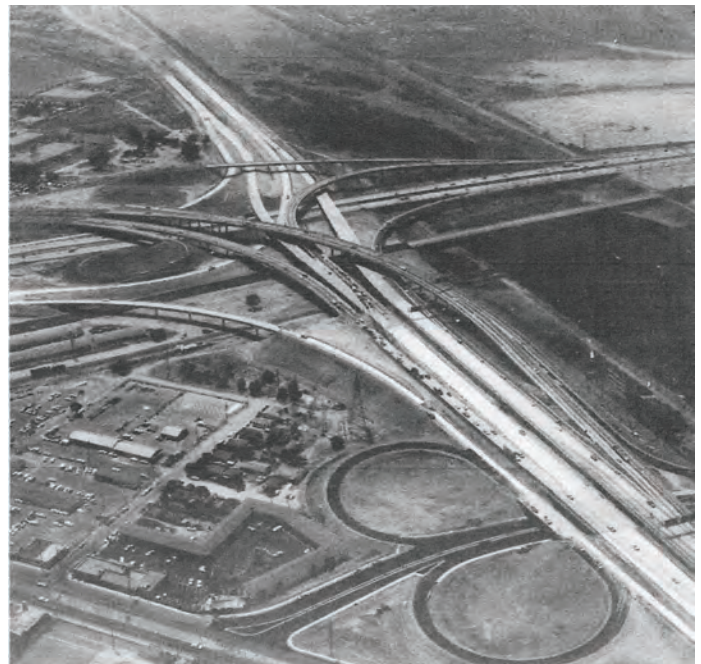
then returned to his job with the State transportation agency after the war ended. Eventually he and his family settled in San Diego and he became the Caltrans District 11 Director in 1955.

Mr. Dekema was a member of the Caltrans Quarter Century Club, American Society of Civil Engineers, the California Board for Professional Engineers, Land Surveyors and Geologists, the Military Officers Association of America and the Military Order of the World Wars. He was also a Master Mason in the Winneduma Lodge No. 287, in Bishop, CA, for 56 years.

Mr. Dekema is survived by Shirley, his wife of 71 years, and by daughter Pamela (Richard Champe), son Douglas, granddaughter Margarite Dekema Zettervall, and great-grandchildren Maggie Mae and Jake.

To honor Mr. Dekema’s 100th birthday, the California Transportation Foundation created the Dekema Scholarship for California high school and college students planning a career in transportation. www.transportationfoundation.org/donate

The above “In Memoriam” information was drawn from obituaries and memorial articles published in the San Diego Union Tribune (May 5 and 8, 2017, and July 24, 2015), and the Los Angeles Times (May 8, 2017). – William E. Lawson, PE, F.ASCE



I-5/8 State Route 109/209 interchange at Mission Bay Park heading for the Ocean Beach Area built under Dekema’s leadership in 1969

of design in order to assess all issues from different aspects. We do a feasibility study with architects and try to work with them to see how it can be incorporated into the design. As civil engineers, it is easier to think logically and shoot down an idea, but now I have found that the engineers I work with try to think outside of the box so we can incorporate all ideas. This has resulted in very creative projects that incorporate sustainability and has led to better designs.

The second complaint I hear from engineers is that architectural ideas evolve dramatically during a project's lifetime, which lead to numerous changes in project plans thus, without realizing it, causes conflicts with specifications already called out by the civil engineer. It may appear that architects tend to think that a quick design change before a deadline is also a quick engineering design change. When a project is in the preliminary design stage, this might not be such a big deal. However, changes during the design of a construction document leads to engineering change orders for the client, leading to assume that architects do not understand that these changes also equate to time and money. I have learned that many of the architectural changes are driven by the Client themselves. Architects attend many behind-the-scenes client project meetings where revisions are presented as necessary for client satisfaction. It has been helpful to attend these meetings so if there is a client requested change, I can state the reasons why some of the changes could lead to client dissatisfaction on another part of the project. This way, if the Client still desires to make the change, then everyone can be flexible in order to make the necessary modifications. It is true that if everyone is fully involved with the project, it will be easier to understand the changes and implement them quickly.

The third complaint I hear, and the most common, is from a CADD perspective, and is that architectural drawings are always on an architectural scale and never on the state plane coordinate system. Oftentimes, a site plan from an outside architect is a sketch and not a site plan. Examples of this are when the lines on parking stalls are not parallel, dimensions are incorrect and not to the precise hundredth, and property lines are randomly drawn into a drawing. It usually takes many additional hours to get the drawing to a workable site plan just to begin our work, and often times it is faster to draw the horizontal control from scratch. This has not been an issue at our company since the landscape architects and civil engineers work together to design a workable site plan. With advances in CADD technology utilizing REVIT and Civil 3D, there are even more complications as we try to incorporate architectural drawings into civil drawings. A constant struggle is exporting and importing drawings back and forth without doubling our efforts with our architects. At the end of the day, it's important that architects understand how we draw our site plans as well as understand the differences between an aerial survey and a ground survey. If we meet and communicate these items we can educate each other to resolve these issues.

Many of you have asked me how it is working at an integrated design firm. Our office is a LEED building where all desks are out in the open with very low partitions. Other than our conference rooms, we have

no offices. This allows a lot of interaction which normally wouldn't happen if we were enclosed in offices typically found in engineering firms. Personally, it has been beneficial working with architects and other engineering disciplines in an environment where I can walk a couple of steps or turn to my neighbor in order to ask an architectural question without waiting for them to call me back. Since I can talk to them face to face, we both understand what the outcome is when a design on a project is changed. We both are current on project issues, and share client information. This unique environment has taught me a better way to handle architect-engineer project conflicts. Developers have told me that most civil engineers and architects blame each other for the problems that may occur on a design, but never resolve the problems together. However, when you have an architect working with you within the same company, there is no potential for finger pointing since the ultimate blame would be on the company and would affect the profit margin. By acknowledging that both disciplines have at one point or another disagreed with each other, the team has made the extra effort to have a good working relationship with each other. I also believe that both sides are continuing to acknowledge and make some modifications to the way we think of each other, moving in the right direction. This of course, has been an experience unique to me, but it has given me insight as to the possibilities of bridging the gap between the two disciplines and every day we are becoming more integrated and learning how to work better together.



State Investments and Legislative Update

by Richard Markuson, CA Region 9 Legislative Advocate



The Legislature passed and Governor Brown signed Senate Bill 1 and four companion measures. Only one Republican ended up voting for SB 1. Two Democrats voted NO and one – Assembly Member Rudy Salas, was subsequently removed as chairman of the Assembly Business and Professions Committee.

The legislation, the *Road Repair and Accountability Act of 2017*, invests \$52.4 billion over the next decade - split

equally between state and local projects:

Fix Local Streets and Transportation Infrastructure (50 percent):

- \$15 billion in “Fix-It-First” local road repairs, including fixing potholes
- \$7.5 billion to improve local public transportation
- \$2 billion to support local “self-help” communities that are making their own investments in transportation improvements
- \$1 billion to improve infrastructure that promotes walking and bicycling
- \$825 million for the State Transportation Improvement Program local contribution
- \$250 million in local transportation planning grants.

Fix State Highways and Transportation Infrastructure (50 percent):

- \$15 billion in “Fix-it-First” highway repairs, including smoother pavement
- \$4 billion in bridge and culvert repairs
- \$3 billion to improve trade corridors
- \$2.5 billion to reduce congestion on major commute corridors
- \$1.4 billion in other transportation investments, including \$275 million for highway and intercity-transit improvements,

The packaged signed by Brown included:

- ACA 5 by Assembly Member Jim Frazier that, if approved by the voters, would amend the California Constitution to prohibit the Legislature from borrowing revenues from fees and taxes imposed on vehicles or their use or operation, and from using those revenues other than as specifically permitted in the Constitution.
- SB 131 by the Committee on Budget and Fiscal Review - State public employment: memorandum of understanding,
- SB 132 by the Committee on Budget and Fiscal Review - Budget Act of 2016. SB 132 includes almost \$1.0 billion in funding for specific projects, and
- SB 496 by Senator Anthony Cannella (R-Ceres) - Indemnity: design professionals. The bill provides that a design professional, shall only have the duty to defend an indemnitee for claims against the

indemnitee that arise out of, pertain to, or relate to, the negligence, recklessness, or willful misconduct of the design professional.

Other Legislation

The Assembly Local Government Committee approved ASCE supported AB 851 (Caballero D) that allows additional types of special districts to use the design-build procurement method that is authorized for specified local agencies, and allows cities, counties and special districts to use design-build for additional types of projects.

The Assembly Natural Resources Committee rejected AB 1301 (Fong R) that would have established the mission of the Joint Legislative Committee on Climate Change Policies (JLCCCP), as specified, and required the Chair of the Air Resources Board (ARB) to annually appear before the JLCCCP to report on cost and technological feasibility of greenhouse gas (GHG) reduction measures. The bill had substantial support and no listed opposition by failed on a party-line vote.

The Senate Veterans Affairs Committee approved ASCE supported SB 27 (Morrell R) that will require every board under the Department of Consumer Affairs (DCA) to grant a waiver for the application and initial licensing fee to an honorably discharged veteran.

The Senate Appropriations Committee sent ASCE supported SB 436 (Allen D) to Suspense. The bill establishes the California STEM Professional Teaching Pathway to recruit, train, support, and retain qualified science, technology, engineering and mathematics (STEM) professionals as mathematics and science teachers in California. The bill includes an unspecified Proposition 98 General Fund appropriation, beginning in the 2017-18 fiscal year, for purposes of this bill. It is likely the bill would result in one-time costs of \$5 million and ongoing costs of between \$500,000 to \$1 million (Proposition 98 General Fund).

Brown Lifts Drought Emergency Order.

Following unprecedented water conservation and plentiful winter rain and snow, Governor Edmund G. Brown Jr. ended the drought state of emergency in most of California, while maintaining water reporting requirements and prohibitions on wasteful practices, such as watering during or right after rainfall. “This drought emergency is over, but the next drought could be around the corner,” said Brown. “Conservation must remain a way of life.” Executive Order B-40-17 lifts the drought emergency in all California counties except Fresno, Kings, Tulare and Tuolumne, where emergency drinking water projects will continue to help address diminished groundwater supplies. The order also rescinds two emergency proclamations from January and April 2014 and four drought-related executive orders issued in 2014 and 2015.

Governor's Appointments

Michelle Banonis, 40, of Sacramento, has been appointed assistant chief deputy director at the California Department of Water Resources. Banonis has been area manager for the Bay Delta Office at the U.S. Bureau of Reclamation since 2016, where she has served in several positions since 2009, including, special assistant to the regional director, California WaterFix program manager, restoration goal supervisor for the San Joaquin River Restoration Program and natural resources specialist.

Recent Reports

Six of the ten cities with the worst air pollution are in CA.

According to State of the Air 2017 by American Lung Association. "California's smoggy reputation appears to be deserved: Six of the USA's 10 cities with the worst air pollution are in the Golden State.... In addition to the worst spikes of short-term pollution—led by Bakersfield—the report also lists the cities with the worst overall year-round pollution—led by Visalia/Hanford, Calif.—and the worst ozone pollution, led by the Los Angeles/Long Beach area. California's soaring population and topography allow air pollution to overcome the state's strict environmental laws, said Paul Billings of the American Lung Association. The boom in people brings with it an increase in cars and trucks on the road, and many of the people live in valleys and basins, right where pollution tends to settle.... Overall, the report is a mixture of good and bad news: While year-round pollution has improved, short-term spikes of intensely polluted air have increased." (USA Today, Apr. 19, 2017).

50-state survey of clean energy-related economic policies. The U.S. Department of Energy released Clean Energy-Related Economic Development Policy Across the States: Establishing a 2016 Baseline.

"States implement clean energy-related economic development policy to spur innovation, manufacturing, and to address other priorities.... To date, no one source has collected all of the clean energy-related economic development policies available across the 50 states. Establishing a baseline of existing policy is a critical first step in determining the potential holistic impact of these policies on driving economic growth in a state. The goal of this report is to document the clean energy-related economic policy landscape ... with a focus on new or existing [clean energy] manufacturing." California has the 4th-most number of total clean energy policies with 35. (New York is first with 42.)

Best practices for identifying public infrastructure projects.

Brookings Institution released Budgeting for Investment. "There is a strong consensus that the country needs to do a better job investing in public infrastructure. One issue with making smart infrastructure investment is that the budgetary process does a poor job differentiating between spending that will generate future returns from spending more generally. This study provides a set of best practices that the author argues could allow budget planners to better identify innovative public investments."

Transferring CO River water for specific area of need explored.

Stanford Woods Institute for the Environment released Colorado River Basin Environmental Water Transfers Scorecard. "The Colorado River and its tributaries support more than 35 million people and irrigate more than four million acres of farmland. At the same time, the river supports 30 fish species found nowhere else on earth and inspires millions of visitors and residents alike with its sheer beauty. However, growing water scarcity caused by increased water use, hydrologic variability and climate change loom over all the Colorado River provides.... This report focuses on one set of tools for reallocating water to one specific area of water need: water for rivers, streams, wetlands, and the aquatic species that depend on them." California ranked No. 2 in this report's Environmental Water Transfer Scorecard, which uses a numerical scoring framework to rank the ease or difficulty in state laws or policies regarding environmental water transfers.

Computer model predicts accelerated So. CA beach erosion

Journal of Geophysical Research: Earth Surface released A Model Integrating Longshore and Cross-Shore Processes for Predicting Long-Term Shoreline Response to Climate Change. "Using a newly-developed computer model called 'CoSMoS-COAST' (Coastal Storm Modeling System – Coastal One-line Assimilated Simulation Tool) scientists predict that with limited human intervention, 31 to 67% of Southern California beaches may become completely eroded (up to existing coastal infrastructure or sea-cliffs) by the year 2100 under scenarios of sea-level rise of one to two meters.... Although a majority (72%) of beaches in Southern California show historical trends of accretion or getting larger (due to large artificial beach nourishments since the 1930s), future predictions indicate that nearly all of the beaches will experience erosion (will get smaller) due to accelerated sea-level rise."



www.ascelasection.org

Environmental Water Resources Institute, San Francisco Chapter (EWRI-SF) Update

by Fred Blickle, P.E., M. ASCE, Chair, EWRI-San Francisco Chapter, and Principal, GHD Inc.



EWRI-SF Chapter has Water on the Brain

Or more appropriately put, we've had water on our minds a good deal lately at the Environmental Water Resources Institute, San Francisco Chapter (EWRI-SF). Various challenges and issues surfaced of late that has brought water to the front page for many people considering the issues with too much water in too short a period of time in California. The Oroville Dam, north of

Sacramento, was bulging at the seams earlier this year when water had to be released from an emergency spillway to protect the dam from collapsing. 200,000 people were evacuated from the area until engineers could determine that the surrounding residents were no longer at risk from dam collapse. The release caused extensive damage to the dam spillway, with current estimates of \$275 million price tag for spillway repairs that need to be completed before the start of the next rainy season (November 1st).

Many hill slides and road slides occurred throughout the State earlier this year, as a combination of water-logged soils and gravity took over and moved soil and rock to places where people would rather not have it. Whole football fields in San Bernardino County slid! Big Sur was closed due to slides across the Pacific Coast Highway. Numerous other roads have been impacted from these slides. It's no wonder, as all weather stations across the State are reporting well over 100% of the average rainfall year to date for this Water Year (which runs October 1st through September 30th). Some are reporting over double the average yearly rainfall! For areas that are not accustomed to a lot of rainfall, this causes problems. Average rainfall for the Bay Area is about 24 inches per water year, compared to the State of Florida which has a statewide average of nearly 30 more inches. Florida is however much more accustomed to managing all that water's impact on their land and structures.

The city of Los Angeles is presently wondering where they are going to put all the water that will be heading their way in a few weeks when snowfall melt reaches its peak. Squaw Valley is staying open for skiing past July 4 this year. What is going on? Didn't we just endure harsh water restrictions in 2015, and didn't we pass Proposition 1 to the tune of \$7.5 billion because we were running out of water? El Nino is what's going on, and we are experiencing unusually high precipitation on the west coast currently, although this may soon return to the

typical dryer climate cycles. El Nino, which means The Little Boy or Christ Child in Spanish, was originally recognized by fisherman off the western coast of South America with the appearance of unusually warm water in the southern Pacific Ocean that occurred around December. According to the National Oceanic and Atmospheric Administration (NOAA), El Nino begins when the Humboldt Current, which flows south to north along the western coast of South America and turns west at Ecuador and runs at Galapagos, stops for some unknown reason. This starts a chain reaction that spans around the world causing warmer, wetter weather in some locations, and drier hotter weather in others. These changing weather patterns can result in huge changes in crop production, and massive die-off in certain animal species, due to breaks in the food chain. El Nino generally lasts for 9 to 12 months, but can extend for years. It is followed by La Nina, periods of below-average sea surface temperatures across the east-central Equatorial Pacific.

EWRI-SF and the ASCE-Golden Gate Branch recently hosted dinner meeting speakers author Rita Schmidt Sudman and artist Stephanie Taylor, who had published the book "Water, More or Less". The speakers profiled a few examples from their very interesting book which features information from interviews with twenty top water leaders in the state; representing diverse views, insights, and options for solutions. Stephanie's paintings and photography brought life and impact to the topics of which Rita spoke. Both Institute members and other attendees found the meeting very informative.

Water issues were also the focus of the EWRI World Environmental & Water Resources Congress which was held in Sacramento, California from May 21-25, 2017. The overall theme was "Creative Solutions for a Changing Environment", with a primary focus on water and weather cycles, and a keynote speaker being Dr. Marty Ralph, Director of the Center for Western Weather and Water Extremes, UC San Diego Scripps Institute of Oceanography. More information from the Congress can be found at www.ewri.congress.org

Created in 1999, EWRI is the recognized leader within ASCE for the integration of technical expertise and public policy in the planning and design, construction, and operation of environmentally sound and sustainable infrastructure impacting air, land and water resources. <http://www.asce.org/environmental-and-water-resources-engineering/environmental-and-water-resources-institute/>

For more information about the EWRI-SF, please contact Fred Blickle, PE, Chair, EWRI San Francisco Section at fb



Which Civil Engineering Networking Events Should I Attend?

by Anthony Fasano, P.E.



Your time is limited, today more than ever. Like most everyone, civil engineers are overextended, and between their careers and personal lives they have way too many responsibilities.

That said, sacrificing networking due to a lack of time could be a dangerous move that jeopardizes your career success. As a civil engineer, your network will drive your success.

Your network can provide a mentor to help facilitate your career advancement. Your network can help generate new business for your firm – always an immediate career booster. Your network can also help you to find a new job when you need or want one. I could go on, but I think you get the picture.

Instead of trading in your networking time for more work, be smarter about it. Network more effectively.

Networking effectively involves a series of steps, and in this post I will cover the first step – Selecting the right networking events to attend.

Here are five considerations for selecting networking events:

Attendees

First, consider the attendees in relation to your career goals and challenges. To which industry is a certain function appealing? Are the people who show up going to represent a diverse range of professionals? Are they going to be solely civil engineers? Will they be my prospective employers or clients?

A good question to ask yourself is, “What are my current career needs?” If you’d like to build relationships with real estate developers, then you need to go to an event where they will be. This is really important, because even if you go to a good event that has the wrong people, it’s probably a waste of time.

By “wrong,” I mean an event with attendees who can’t help you achieve your goals. But you must also ensure that you can give value to the attendees in some way. If you go into an event thinking only, “How can they help me?” you will never build strong relationships. Think two-way street.

Cost

I’m not necessarily saying to pass on an event if it costs a lot. I’ve learned that the cost doesn’t always equate to the quality associated with an event. The fact that it’s a high-priced event doesn’t mean it’s going to offer value, or include the right people, or cover the best topic for you. Don’t base your decision on cost alone. Don’t judge a book by its cover price.

Time and location

Picture a networking event where you have to drive 45 minutes from your office in the middle of the day. That eliminates your ability to be billable for an entire day. Now, if it’s worth it, that’s one thing, but if it’s not worth it, you are actually hurting yourself and your firm.

Your time is valuable. Sure, if an event is close to your office, and maybe it’s a breakfast meeting that you can attend on the way in to work, that won’t displace as much billable time as a middle-of-the-day event. Bottom line, time and location matter.

Content

If you’re going to an event for the content, and it’s a very pertinent topic, that’s a great reason to go. If you’re going to learn about, say, new guidelines, whether it be wetland guidelines or any other information that will make you more valuable to clients and prospective clients, then it’s most likely worth it. So: “What’s the value factor?”

Contacts

Last, consider the following statement: The value of your network is based on the quality of your relationships, not the quantity.

Don’t go to an event just because you think it’s going to be a well-attended event. True, if there are more people there, that gives you more chances to meet the right people, but that doesn’t mean you can’t find a really solid 10- to 20-person event where you can build some really strong relationships. Think quality, not quantity.

So, when it comes to deciding on whether to attend a certain networking event, the first step is to consider these five items. Overall, ask yourself how the event might help you move closer to your goals, while at the same time increasing your value to help others achieve theirs.

Anthony Fasano, P.E., is the founder of The Engineering Career Coach website, which has helped thousands of engineers develop their business and leadership skills. He hosts The Civil Engineering Podcast, and has written a bestselling book for engineers entitled Engineer Your Own Success. You can download a free video series www.engineeringcareercoach.com that will give you the tools needed to immediately improve your networking and communication skills.



Region 9 Water Committee Hot Topics

by Xavier Irias, P.E., M. ASCE, Chair, ASCE Region 9 Water and Environment Committee



As of April 26, 2017, the California Department of Water Resources (DWR) announced snow packs of 150% to 210% of the average for this time of year and in addition, we've received record amounts of rainfall this season. On April 7, Governor Brown issued an executive order to end the drought state of emergency in all California counties except Fresno, Kings, Tulare and Tuolumne, where emergency drinking water projects will continue to help address diminished water supplies.

In those areas, reporting requirements and prohibitions on wasteful use remain in effect. Throughout the state, current surface water storage in major State Water Project reservoirs ranges from 44% to 99% of historic average.

During the wettest months, many reservoirs exceeded their capacity resulting in spillway releases, which for some facilities had not occurred in decades. Although a welcome sign from a water supply viewpoint, the spills raised new concerns with statewide dam safety.

Oroville Dam, owned and operated by the California Department of Water Resources (DWR), is the tallest dam in the U.S. At 770 feet in height and capable of impounding more than 3.5 million acre feet of water, Oroville dam provides water supply, hydropower generation and flood control for the region and much of the state. Heavy rains between mid-January to mid-February led to record releases of water. During this time, a large crater formed in the dam's main spillway. In an attempt to minimize further damage, flows were reduced. As storms continued, lake levels rose, necessitating the use of the dam's emergency spillway on February 11th, for the first time in its nearly 50-year history. The releases caused erosion, resulting in a concern for the integrity of the structure, and on February 12th authorities issued a mandatory evacuation of over 180,000 people in downstream communities. The root causes of failure have been studied and no doubt will lead to a better understanding of dam design and inspection practices. The state legislature has engaged. Assembly Bill 884 (Levine) Dams and Reservoirs: Inspections, AB 1270 (Gallagher) Dams and reservoirs inspections and reporting, and AB 1271 (Gallagher) Dams and reservoirs, have been introduced to address dam safety practices and funding.



Funding in this area is clearly needed, as ASCE's 2017 Infrastructure Report Card gives dams "D" rating. According to the Report Card, the average age of the 90,580 dams in the country is 56 years. As our population grows and development continues, the overall number of high hazard potential dams is increasing, with the number climbing to nearly 15,500 in 2016. Due to the lack of investment, the number

of deficient high hazard potential dams has also climbed to an estimated 2,170 or more, according to ASCE's Dams summary for the 2017 Infrastructure Report Card. The Report Card estimates that it will require an investment of \$45 billion to repair aging, yet critical, high hazard dams and other industry reports indicate that costs may be even higher. The Governor's four-point plan to bolster dam safety and flood protection in the state proposed a \$437 million investment in near-term flood control and emergency response actions, which only scratches the surface of the overall infrastructure need.

As California experiences the most varied climate in the nation, it is also important that we continue to stay focused on integrated regional water management, groundwater management and conservation. As the range of climate variance is expected to increase in the future, it is important that the Engineering community continue to look at ways to balance flood control with water supply through focus on forecast-informed reservoir operations. Real-time reservoir operations using actual watershed data on snowpack and soil moisture combined with improved forecasting of Atmospheric Rivers can improve operations of multi-purpose reservoirs with little capital investment.

Our varied climate and diversity throughout the state has also highlighted the need to provide sustainable water for disadvantaged communities. This past year has seen increased legislative support and funding, which has led to the implementation of projects to inventory and improve water supplies for small rural communities.

The recent drought highlighted the need for a multi-pronged approach to water supply resiliency. DWR has continued to implement the new and expanded measures identified in the 2014 Sustainable Groundwater Management Act (SGMA) including developing groundwater basin boundaries, adopting regulations for implementing Groundwater Sustainability Plans, identifying over-drafted basins and potential sources and specific projects for groundwater replenishment. The first major deadline in SGMA is approaching on July 1 of this year for all high and medium priority groundwater basins. Groundwater Sustainability Agencies must be formed by then and must cover the entire basin with no underlap or overlap of responsible agency boundaries. Groundwater basins missing this target will likely see enforcement intervention by the State Water Resources Control Board. Even if governance issues are resolved, many areas, notably in the San Joaquin and Tulare Basins are expected to experience a difficulty in providing sufficient recharge supplies to offset historical pumping demands.

In addition to the myriad new investments required to maintain reliable water supply, flood protection, wastewater treatment and recycling, and protection of our environment, significant additional investments are needed to simply maintain existing infrastructure in a reliable, sustainable fashion. Much of the California's existing water infrastructure is at or near the end of its useful life, and agencies lack

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the funding for replacing this infrastructure. This investment need adds to the burden to construct new infrastructure to maintain pace with economic growth while balancing environmental needs.

It is clear that the State is in need of additional infrastructure investment, and ASCE's Report Card has helped build public awareness of that need. In addition, the advocacy of civil engineers expressed through participation in the annual ASCE D.C. and Sacramento Legislative Fly-Ins, and in participating in the ASCE's Key **ASCE GRAND CHALLENGE** *Rethink What's Possible* Contact program, is needed to ensure that the need is heard and understood by policy-makers and lawmakers. The other challenge for us is to continue to make the best use of the funds that we have. The ASCE's Grand Challenge (www.ascegrandchallenge.com) calls on us to rethink what is possible within our areas of practice. With a goal of reducing infrastructure life cycle costs by 50% by 2025, that initiative challenges us to optimize the size, scope and character of infrastructure for society.

If you would like to learn more about the activities of the Region 9 Water & Environment Committee, please contact me at xavier.iras@ebmud.com

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The Industry Leaders Council engages senior leaders from industry, academia, government, and non-governmental organizations to identify tactical actions for ASCE and the civil engineering profession.

Membership on the ILC is by invitation only. Council members commit to a two (2) year term of service. Potential candidates are nominated by their peers and those candidates selected to join the ILC receive an invitation from the ILC Chair and ASCE Executive Director.

Interested in learning more about the ILC? The ILC is always looking for dedicated, active, and dynamic leaders to join them in their work for the industry. Please contact Carol Vargas (cvargas@asce.org), Director of Industry Relations for information.



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Typesetting, Layout & Printing: Apollo Printing & Graphics



Please send all copy to the Editor by
the first of the month preceding publication.

Identification Statement

ASCE Newsletter, (ISSN 0273-6233)
is published monthly by ASCE,
Los Angeles Section, 1405 Warner Ave.
Tustin, California 92780. Subscription price
included in Section dues of \$55.

Circulation

Circulated monthly (except for a joint
July/August issue) to the 5,000 subscribing
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