Aspen Environmental Group

Recent Accomplishments and Ongoing Projects

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Integrated Energy Analysis & Planning Services

Aspen's Integrated Energy Analysis and Planning (IEAP) Division continues to expand in California, Nevada, and the West. Our IEAP staff provides expert testimony in regulatory proceedings; conducts quantitative economic and engineering analysis to support program evaluation and policy analyses; and drafts policy analyses for local, state and regional clients. IEAP staff use a systems approach to bring economic, engineering, environmental, and policy expertise together to deliver integrated energy system resource planning assessments.

Staff technical expertise covers many aspects of integrated assessment issues including demand forecasting and evaluation; energy efficiency forecasting and evaluation; renewable energy generation planning; natural gas planning and policy assessment; water resource planning; global climate change policy modeling and assessment; and air quality management policy assessment. Please view a sample of our projects which cover several lines of business and services for a variety of clients on page 4.

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Aspen Newsletter Goes Paperless!

Please watch for our next edition in your inbox.

Also look for e-announcements about Aspen's upcoming **20th Anniversary**

Renewable Energy: Location, Location, Location!

As the saying goes, energy development has become all about "location, location, location." No longer can a power plant simply be plopped down near a load center—it often requires identifying the relevant geography and shipping the energy long distances. This "new" resources planning paradigm requires a much broader examination of "place" and tradeoffs than traditional planning has done in the past.

Aspen is on the leading edge of this new paradigm. Below are examples of Aspen working at four different layers—evaluation of broad policies, development of specific plans, review of renewable project proposals, and permitting support for specific projects. Integrating these layers will be necessary to successfully implement the new direction in energy development.

Aspen Leads Development of Long Term Electricity Procurement Plan Guidelines

Aspen managed the consultant team that created the draft planning guidelines developed by the Energy Division staff of the California Public Utilities Commission (CPUC) for the 2010 Long Term Procurement Plans (LTPP). Aspen's team included E3 and Plexos Solutions. These guidelines direct utilities regarding the data, assumptions, methodologies, and performance metrics that will be acceptable in their 2010 LTPP filings. They also suggest specific resource scenarios with particular policy relevance to the CPUC and State policy makers in California's aggressive Renewables Portfolio Standard (RPS), Energy Efficiency, and Climate goals in the coming decades.

In addition, the Aspen team worked to support the CPUC Energy Division staff in their project to understand the implementation challenges of moving from a 20% RPS mandate to a 33% standard. The analysis used results from the Renewable Energy Transmission Initiative (RETI) and new project level data held by the CPUC to provide insight into plausible mixes of renewable generating resources to meet a 33% RPS, as well as potential ratepayer impacts, required network upgrades, and resource integration measures.

An important innovation by Aspen was the evaluation of the implementation issues and barriers that could affect compliance with the 33% RPS requirement. Aspen's expertise provided the team with the ability to simulate what the build out might look like when all of the real-world timelines and constraints are taken into account. Our transmission and renewable energy generation permitting experience provided the team with essential information on planning, permitting, and construction timelines expected in California. Aspen's delineation of these issues allowed the team to identify solutions and formulate strategies to minimize the potential impact of the identified constraints and barriers.

Aspen & RAND Team to Explore Policies to Reduce GHG for CEC

In cooperation with RAND Corporation, Aspen developed a method to explore the consequences of policy choices over a wider range of outcomes for the California Energy Commission (CEC). Called "exploratory modeling" (xM), and applied in a "robust decision making" (RDM) framework, this approach recognizes that it is not useful to rely on a detailed, complex model to choose one single "best" policy given the deep uncertainties associated with climate change, technological change, and policy implementation. Instead, RDM considers policy performance of a wide range of futures so that the vulnerabilities of competing policy options can be compared. Furthermore the vulnerability assessment facilitates the identification of strategies that can mitigate the risks of the respective policy alternatives. The

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Air Quality, Climate Change & GHG Services

Complete environmental review of energy infrastructure demands a rigorous consideration of air quality implications. Air quality is more than plugging numbers into black-box models; Aspen takes the discipline seriously and has the skilled staff and the track-record to prove it. We get called to help solve some of the toughest air quality cases in the State of California.

Our air quality staff expertise is enriched by evaluating all kinds of industrial development, infrastructure, and land use decisions. We review new power plant projects statewide for the CEC and new electrical transmission lines for the CPUC Energy Division. We also assist local governments in assessing projects like terminals for liquefied natural gas (LNG) or upgrades at refineries. These all may contribute to climate change or exacerbate public health impacts in local communities.

Our experiences in climate change analysis predate the "CARB (California Air Resources Board) 2008 Climate Change Scoping Plan, Framework for Change," as approved December 2008, Pursuant to AB32 and the 2010 changes to CEQA Guidelines. Fortunately, today there is much more clarity on how to approach assessing climate change. Local air districts are busy introducing recommendations for managing GHG emissions, and the US EPA made the finding confirming that GHG pollution endangers public health and welfare, laying the groundwork for federal regulation. Aspen is routinely in touch with these developments, and we continuously help agencies respond to the evolving landscape on every new project.

Climate change sometimes becomes relevant in surprising ways. Renewable energy must provide an increasing portion of our electricity. However, we've found that large utility-scale solar projects can cause substantial emissions when vehicles are used to wash panels. If biomass fuel is used as a renewable energy source, the emissions from trucks hauling biomass fuel can exceed the total emissions of a comparable fossil-fuel power plant. Congestion on transmission lines that move electricity can inadvertently cause higher GHG emissions from fossil-fueled power plants, if renewable generators aren't available to displace the energy.

We've assisted a diverse range of agencies in the analysis of climate change and local community effects of air quality. Examples include CEC; State Water Resources Control Board; City of Richmond Planning Department; Culver City Planning Department; Santa Barbara County Energy Division and Office of Long Range Planning; City of Long Beach Department of Planning and Building; Los Angeles Department of Water and Power; South San Joaquin Irrigation District; US Army Corps of Engineers; San Francisco Planning Department; and (San Francisco) Presidio Trust. As California has become a leader finding solutions to climate change, our air quality group has been there to help key agencies advance the understanding of impacts from emissions.

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RAND/Aspen team used this method to explore the consequences of different policies in the electricity sector to reduce greenhouse gas emissions in California.

Aspen Continues Support of CEC on Large-Scale Renewable Energy Projects

The CEC's Siting Division has seen a dramatic workload increase in the past 3 years as the number of concurrent applications for certification jumped from an average of six to over 30. The workload has grown disproportionately due to complexity and scale of the renewable energy projects, with some exceeding 10 square miles in size. Many of the large-scale solar projects are on lands managed by the Bureau of Land Management (BLM) and require extensive coordination with the BLM as well as State and federal resource agencies. Corresponding increases in major amendments from previously permitted projects and construction oversight of newly approved projects are also competing for limited staff resources. Under the Siting, Transmission, and Environmental Project Peak Workload Contract, Aspen has provided both project management and environmental analysis to assist the CEC Siting Division to meet the extraordinary workload and expedited schedules necessary to meet the objective of Executive Order S-14-08, that all retail sellers of electricity shall serve 33% of their load with renewable energy by 2020.

Aspen Continues at Forefront of Energy Project Impact Analysis with BLM Contract

The BLM is also addressing an unprecedented number of applications seeking right of way grants to develop renewable energy projects on BLM land—applications total nearly 100,000 megawatts (MW). The deserts of California are of special interest because of their solar, wind, and geothermal energy potential. The projects proposed for BLM land present a challenge: how to encourage alternative energy development while protecting biological resources, aesthetics, existing land uses and recreation, soils, water, and cultural resources of the

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desert. Under Aspen's standing GSA contract, we were selected by BLM to assist with the NEPA compliance process.

Our assignments have included reviewing applicant-supplied information and working with BLM staff to ensure that NEPA documents are complete and compliant with BLM requirements before publication. Major issues that Aspen has reviewed include: identifying appropriate mitigation for identified impacts; assessing the cumulative impacts from multiple renewable energy projects on BLM land; evaluating proposed project decommissioning; permitting and acquisition of rights of way for transmission lines; and examining the adequacy of biological resources surveys.

Also under the BLM/GSA contract, Aspen was selected to help BLM's Palm Springs-South Coast Field Office prepare the Environmental Impact Statement for the revision of the South Coast Resource Management Plan.

Aspen Analyzing Large Solar and Wind Projects

Aspen has participated in the environmental review process of more than 22 solar and 7 wind energy facilities. Below are samples of four larger projects. These projects are being developed in response to California utilities' needs to provide 33% of the State's power from renewable sources:

- **California Valley Solar Ranch** – This 250 MW solar photovoltaic (PV) power plant proposed by SunPower Corporation is proposed to be constructed on approximately 4,300 acres on the Carrizo Plain in eastern San Luis Obispo County.
- **Topaz Solar Project** – This 550 MW solar PV power plant proposed by FirstSolar Corporation is proposed to be constructed on approximately 5,000 acres on the Carrizo Plain in eastern San Luis Obispo County.
- **Pacific Wind Project** – This 250 MW wind energy project proposed by EnXco Inc. is proposed to be constructed on approximately 8,300 acres in southeastern Kern County.
- **Iberdrola Tule Wind Project** – Aspen is assisting the BLM in reviewing the EIS/EIR and ensuring NEPA compliance for this 200 MW wind project connecting to the proposed Boulevard Substation rebuild component of SDG&E's ECO Substation Project where the electricity generated would feed into the existing SWPL 500 kV transmission line. The EIS/EIR is being prepared by the CPUC, also directed by BLM as the NEPA Lead Agency, together with San Diego County, Bureau of Indian Affairs, and California State Lands Commission as Responsible and Trustee agencies.

Mitigation Monitoring Specialists

For the past decade, Aspen has been implementing **Mitigation Monitoring, Compliance, and Reporting Programs** (MMCRP) for a variety of infrastructure projects. An MMCRP ensures effective implementation of the mitigation measures, as well as applicant-proposed measures, adopted by the agencies for construction of a given project. Most MMCRPs implemented by the Aspen monitoring team are comprised of the following three components.

Transport of a replacement steam generator through Camp Pendleton, including crossing of the Santa Margarita River.

Pre-Construction Compliance: The Aspen team, including Project Management staff and technical experts, review all mitigation plans and reports to ensure that they meet the intent of the approved mitigation measures (i.e., they adequately accomplish the intended reduction in impacts). Aspen also tracks required local and State agency permitting/consultations.

Construction Monitoring: Aspen's Environmental Monitors (EMs) perform compliance inspections throughout the construction period to ensure compliance with all applicable mitigation measures, plans, permits, and conditions of approval by lead and responsible agencies. EMs monitor all active construction areas, as well as contact personnel on-site and access technical experts as needed during construction progress. Daily monitoring logs and periodic reports (i.e., weekly or monthly) are prepared, and non-compliances are recorded.

Extra Workspace & Variances: During construction, the need for extra work space or a change in the approved project construction or configuration often occur. The Aspen monitoring team reviews and field validates such requests, and makes appropriate recommendations to the lead and responsible agencies regarding whether a request is consistent with CEQA and/or NEPA requirements.

We recently added several new experts to our monitoring staff:
- Allison Roth
- Stephanie Jayne
- Cassandra Garza
- Dustin Ray.

Monitors documenting water entering Santa Ana sucker critical habitat.

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Selected IEAP Projects

- Western Interconnection Electric System Resource Adequacy Modeling (CEC and RAND)
- California Renewable Energy Transmission Planning Coordination (RETI - Renewable Energy Transmission Initiative) (CEC)
- California Energy Commission Demand and Energy Efficiency Forecast Evaluation (CEC)
- LA Basin Once Through Cooling Retirement Reliability Modeling and Assessment (CEC)
- CPUC 33% Renewable Energy Portfolio Standard Implementation Analysis (Long Term Procurement Planning)
- North American Implications of Replacing Coal with Natural Gas (APPA – American Public Power Association)
- Western Interconnection Transmission System Utilization and Planning Support (WGG - Western Grid Group)
- Western Transmission Support (DOE)
- A 2050 Clean Energy Vision for the Western Interconnection (WCEA)
- Santa Barbara Greenhouse Gas (GHG) Emissions Inventory
- SWRCB GHG & Valuation for Hydro Relicensing
- Environmental Defense Fund AB32 Modeling Review
- Northern Nevada Environmental and Economic Sustainability Plan for Washoe County Air Quality District
- Diesel Technology Forum, 2010 Clean Energy Spring Conference
- PG&E/NID/PCWA Hydropower Relicensing Economic Analysis

Testimony experience:

Dr. Carl Linvill provides testimony on the energy and peak load forecast and on DSM programs in IRP cases involving NPC and SPPC for the Nevada Bureau of Consumer Protection.

Dr. Richard McCann testifies on Cost of Service, Cost Allocation and Rate Design Issues for AECA and WMA.

John Candelaria provides testimony on transmission need determination issues in IRP cases involving NPC and SPPC for the Nevada Bureau of Consumer Protection.